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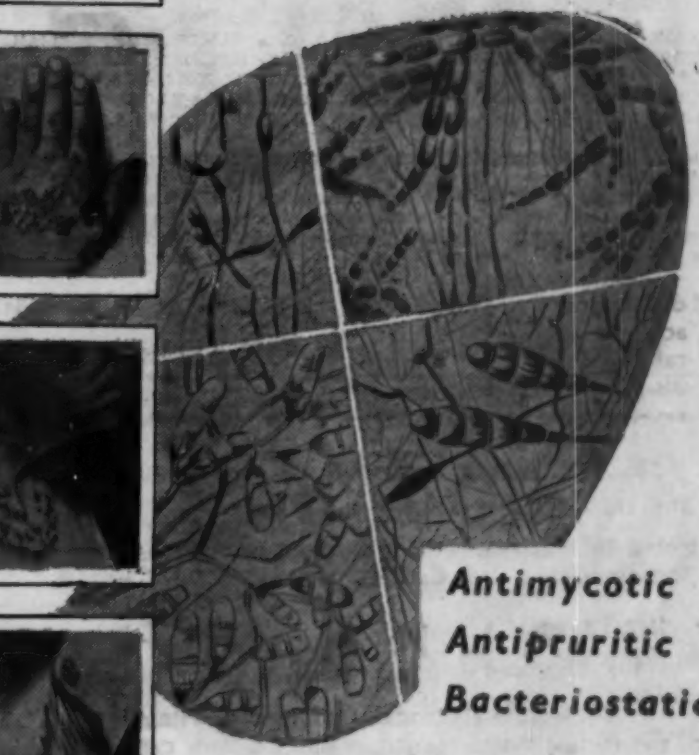

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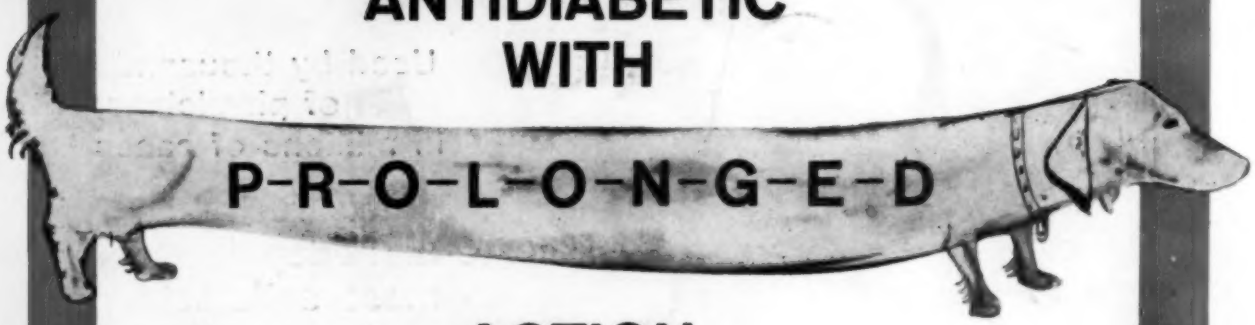

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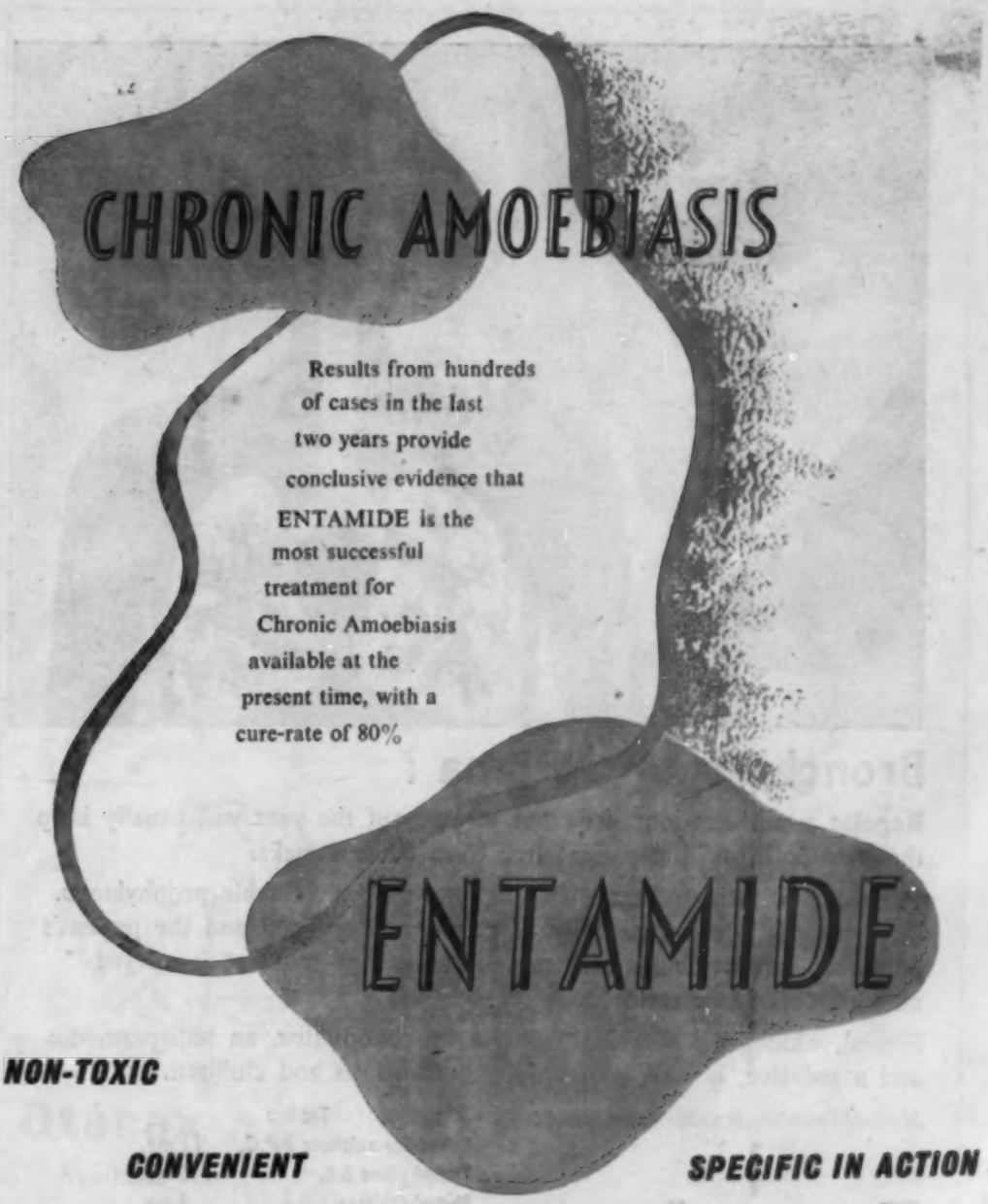
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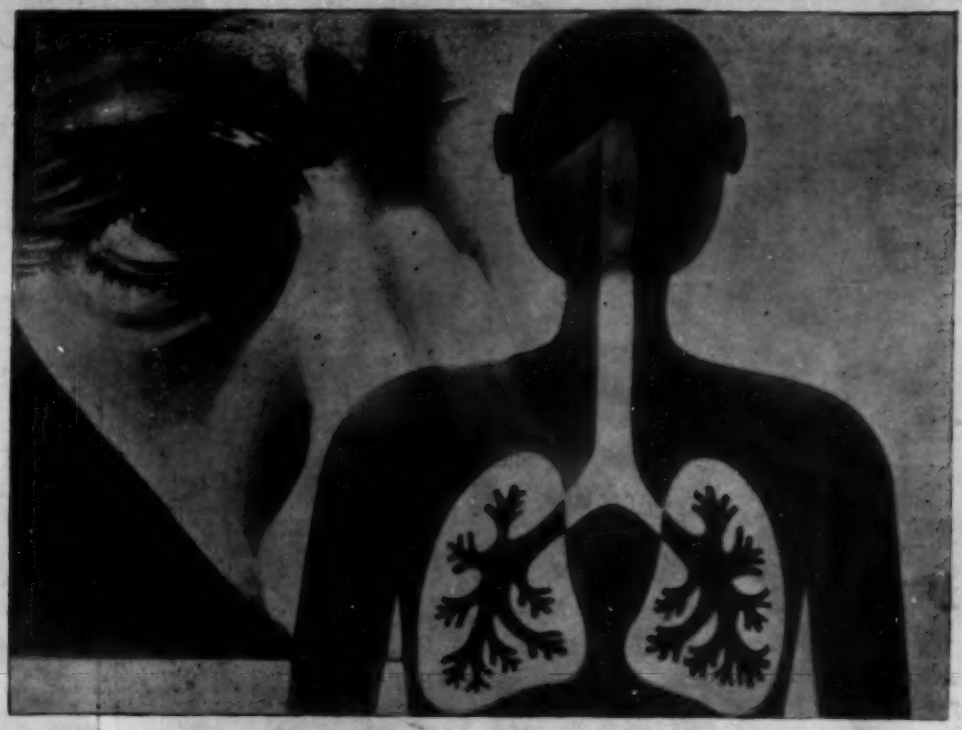

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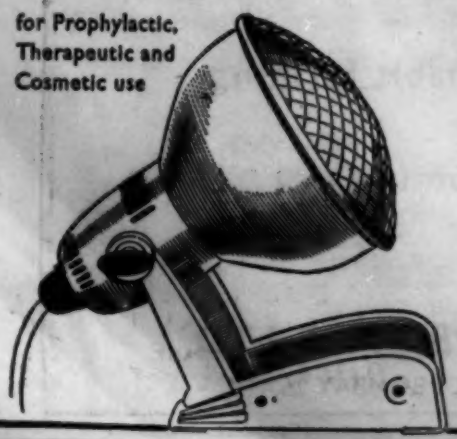

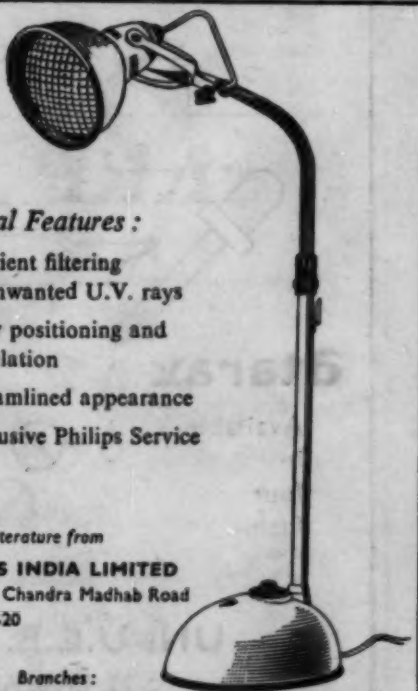

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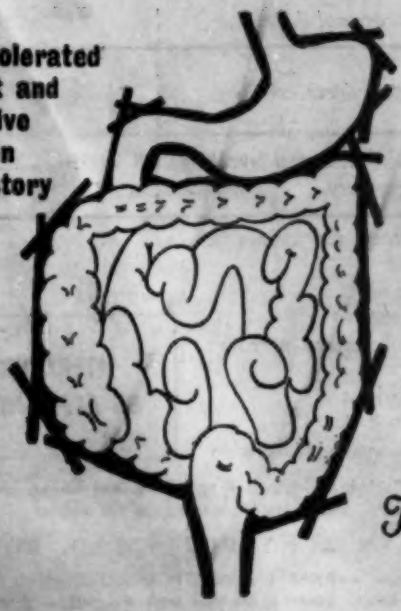

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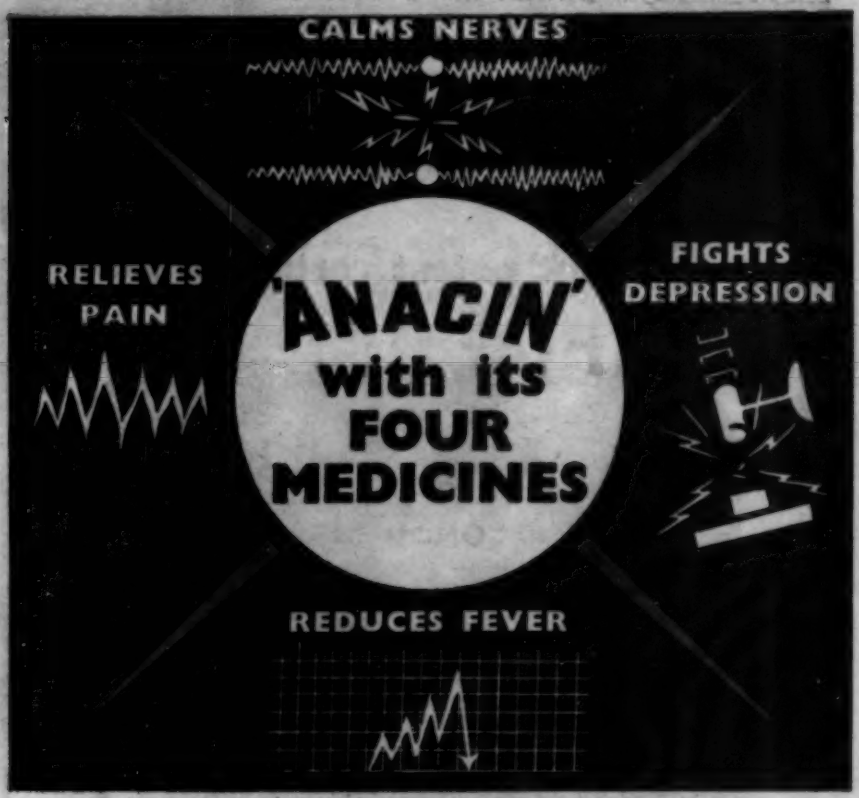

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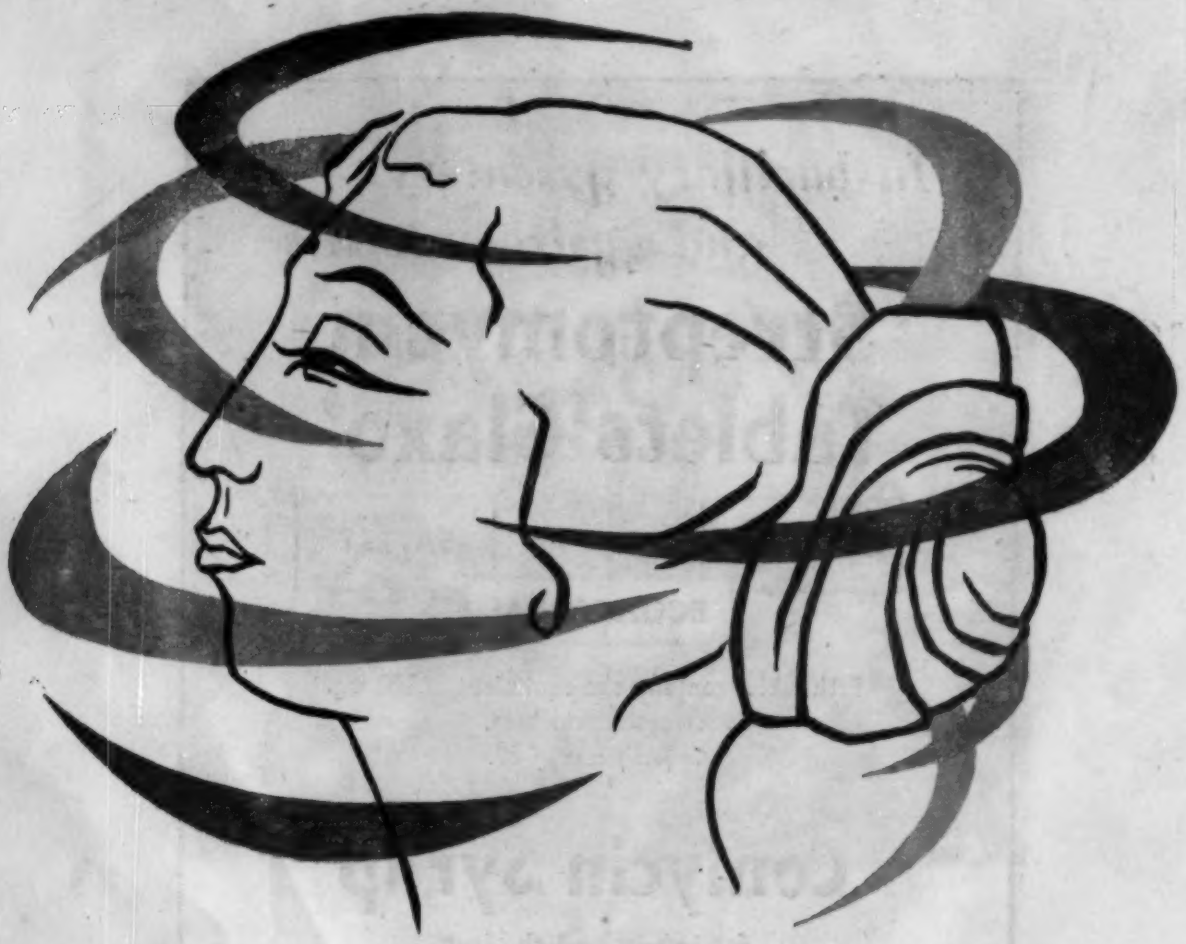

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ORIGINAL ARTICLES

CLINICAL EXPERIENCE WITH CHLORPROPAMIDE IN AMBULATORY DIABETES: A PRELIMINARY NOTE

S. K. MUKHERJEE, M.SC., M.B.B.S., D.PHIL.

U. N. DE, M.SC. AND B. MUKERJI, M.B., D.SC. (MICH.), F.N.I.

[WITH THE TECHNICAL ASSISTANCE OF M. A. HAI AND H. M. CHAKRAVARTI]

Central Drug Research Institute, Lucknow

INTRODUCTION

As a part of a study programme of screening of different oral antidiabetic compounds, clinical trial of chlorpropamide was undertaken in the Diabetes Clinic of our Institute (C.D.R.I.). 1-propyl-3-(p-chlorobenzene sulfonyl) urea more commonly known as chlorpropamide is another member in the well known series of hypoglycaemic sulfonylureas. Effective hypoglycaemic nature of this compound in experimental and clinical investigations has been confirmed from different laboratories (Schneider *et al*, 1959; West and McCampbell, 1959; Root, Sigal and Anderson, 1959; Tornow *et al*, 1959; Craig *et al*, 1959). The antidiabetic nature of chlorpropamide and its usefulness in the treatment of clinical diabetes mellitus have been established in several communications (Granville-Grossman *et al*, 1959; Handelsman *et al*, 1959; Greenhouse, 1959; Hadley *et al*, 1959; Heinsen, 1959; and Beaser, 1959).

Chlorpropamide is qualitatively similar to other sulfonylureas but quantitatively it is more potent than others. It is long-acting and more powerful than tolbutamide and twice as powerful as carbutamide (Schneider *et al*, 1959; Root *et al*, 1959). It can, therefore, be conceived that chlorpropamide might be of more value than other sulfonylureas in the treatment of diabetes mellitus, but for the fact that large doses of chlorpropamide have produced side effects and toxicity, including hepatic damage with clinical jaundice (Hamf *et al*, 1959 and other workers).

In view of the above findings, we investigated the suitability of the clinical use of chlorpropamide by a study of its toxicity and anti-diabetic properties.

MATERIALS AND METHODS

No preference was shown in selection of cases for clinical trial of chlorpropamide, and patients of all age groups suffering from different degrees of diabetes were included. Detailed clinical history of each case was taken down. This was followed by clinical investigations including screening of chest, or skiagram, ophthalmoscopic examination and determination of B.P., etc. In each case, a 24-hour specimen of urine was examined for determination of urine sugar and a fasting sample of blood was examined for finding out its glucose content.

Subsequently diabetic patients, free from pulmonary infections and tripathies (neuropathy, nephropathy and retinopathy), were trained to follow up a prescribed course of diet* followed in this clinic, and calculated on the basis of true

* Carbohydrate, 200-250 g. and protein, 0·8 g. per lb. of body weight, and fat to make up the remaining calories.

TABLE 1—SHOWING THE FINAL EFFECT OF CHLORPROPAMIDE MEDICATION FOR 6 WEEKS IN 12 AMBULATORY CASES OF DIABETES

Case No.	Actual body weight (lb.)	Variation of body weight from calculated body weight (lb.)	Fasting blood sugar in mg. per 100 c.c.		Urine sugar in g. per cent		Response to treatment	Toxic or side-effects
			Before drug	After drug	Before drug	After drug		
1	85	−35	480	350	3·3	4·0	Poor	nil
2	114·5	−35	280	160	1·8	1·0	Fair	nil
3	186	+48	195	120	nil	nil	Good	nil
4	129	+ 5	100	110	4	Traces	Good	Urticaria
5	152	+24	200	140	2	0·7	Fair	nil
6	145	+10	295	100	4	nil	Good	nil
7	153	+13	230	115	1·2	nil	Good	nil
8	132	−10	205	110	2	Traces	Good	nil
9	100	−18	310	200	4	2	Poor	Urticaria
10	119·5	− 5	230	150	—	nil	Fair	nil
11	78	−40	230	255	1·2	4	Poor	nil
12	146	+ 7	190	110	0·7	nil	Good	Headache

TABLE 2—SHOWING AN ANALYSIS OF NUTRITION, ONSET, DURATION AND NATURE OF PREVIOUS TREATMENT IN 12 CASES

Nutritional status			Age in years			Age on onset in years			Duration of diabetes in years			Previous treatment		
Obese	Normal	Underweight	20	20-40	40	20	20-40	40	1	1-5	5	Insulin	Oral compounds	Diet
3	5	4	1	2	9	1	3	8	5	5	2	7	nil	5

calorie requirement†, for a period of two to four weeks. Allowance was, however, made in calorie requirement on the basis of the nature of their occupation. At the end of this period the fasting blood sugar was again determined. Patients having a persistent fasting blood sugar above 0·180 mg./per cent (except one case) were finally selected for screening of chlorpropamide.

Prior to the administration of the drug, glucose tolerance test using 50 g. of glucose, including peripheral arteriovenous difference of glucose, was determined in most cases. Subsequent to these investigations chlorpropamide was administered in the following dosage: 1·5 to 2 g. on 1st day, 1·5 g. on 2nd day, 1·5 to 1 g. on 3rd day, and 1 g. daily subsequently for 7 days. After a trial period of 10 days with this drug the fasting blood sugar was measured and the amount of sugar in the 24 hours' sample of urine was determined. The drug was continued in all cases, with a maintenance dose of 1 to 0·5 g. for a further period of 6 weeks.

At the end of this period glucose tolerance test (8 cases) and arteriovenous difference of glucose in the periphery (2 cases) were re-examined and haemogram was studied whenever possible. The patients were further instructed to contact the clinic immediately in case of any side-effects or toxic manifestations like gastro-intestinal symptoms, giddiness or vertigo and cutaneous eruptions.

In all the cases, blood sugar was determined by Folin and Wu's method (1920).

RESULTS AND DISCUSSION

It is evident from Table 1 that chlorpropamide is an effective anti-diabetic sulfonylurea. It has brought under control in 9 cases (out of 12) of diabetes mellitus of different degrees of severity. In 6 cases out of 9, the degree of control effected can be considered to be good¶. In the rest (3 cases) a fair degree of control of diabetes has been effected. Only 3 cases in this series can be regarded as clinical failure. These three cases (Cases 1,

† True calorie requirement was determined from the height, weight and age with the help of Boothby and Sandifords Nomogram.

¶ The degree of control has been worked out on the following basis:

Good—fasting blood sugar less than 150 per cent; sugar in 24 hours' urine nil.

Fair—fasting blood sugar 0·150—0·180 per cent with sugar in urine less than 1 per cent.

Poor—fasting blood sugar more than 180 per cent with more than 1 per cent sugar in urine.

9 and 11) clinically belong to underweight group and appear to be of insulin deficient type of diabetes (Tables 1 and 2). We are unable to make further correlation of clinical failure and clinical response, with age of onset, duration of diabetes and previous history of treatment, as the

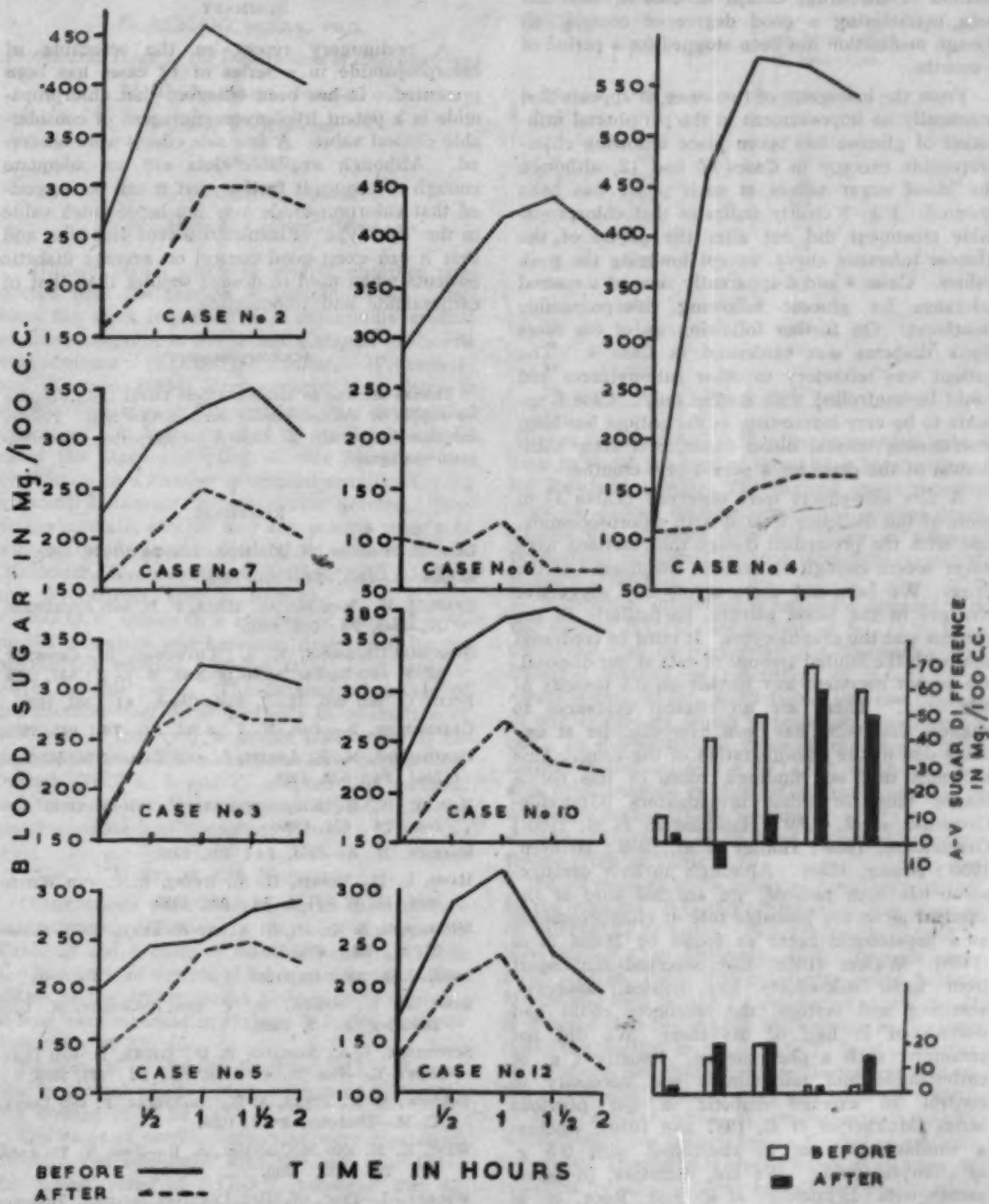

FIG. 1—GRAPHS AND HISTOGRAMS SHOWING RESULT OF SUGAR TOLERANCE TEST BEFORE AND AFTER CHLORPROPAMIDE

data which are at our disposal do not permit us to do so. It should, however, be mentioned that diabetes had recurred in all the cases on discontinuation of the drug, except in Case 6, who has been maintaining a good degree of control, although medication has been stopped for a period of 4 months.

From the histogram of two cases, it appears that practically no improvement in the peripherial utilisation of glucose has taken place following chlorpropamide therapy in Cases 10 and 12, although the blood sugar values at each phase has been lowered. Fig. 1 clearly indicates that chlorpropamide treatment did not alter the nature of the glucose tolerance curve, except lowering the peak values. Cases 4 and 6 apparently showed a normal tolerance for glucose following chlorpropamide treatment. On further following up of the cases frank diabetes was evidenced in Case 4. The patient was refractory to other sulfonylureas and could be controlled with insulin only. Case 6 appears to be very interesting as the patient has been maintaining normal blood sugar level after withdrawal of the drug for a period of 4 months.

A few side-effects were observed (Table 1) in some of the diabetics treated with chlorpropamide, and with the prescribed dosage the reactions were never severe enough to demand withdrawal of the drug. We have not come across any suggestive changes in the blood picture, particularly in the platelet and the granulocytes. It must be confessed that with the limited amount of data at our disposal, we cannot comment any further on the toxicity of the drug. There are no clinical evidences to suggest that there has been liver disorder at any stage due to the administration of the drug. This indicates that our findings, more or less corroborate those of other investigators (Granville-Grossman *et al*, 1959; Handelsman *et al*, 1959; Greenhouse, 1959; Hadley *et al*, 1959; Heinsen, 1959; Beaser, 1959). Although no liver derangement has been noticed, we are not sure at the moment as to the probable role of chlorpropamide as a hepatotoxic agent as found by Hamf *et al* (1959). Walker (1958) had observed that apart from some side-effects like nausea, anorexia, vomiting and vertigo, the leucocyte count had diminished in half of his cases. We did not encounter such a phenomenon. Usually 1 g. of carbutamide and tolbutamide was necessary to control an average diabetic in our previous series (Mukherjee *et al*, 1957 and 1959), whereas a similar case can be controlled with 0·5 g. of chlorpropamide. We are, therefore, in agreement with Schneider *et al* and Root *et al* that chlorpropamide is more potent than carbutamide or tolbutamide so far as the hypoglycaemic property is in question.

Summary

A preliminary report on the screening of chlorpropamide in a series of 12 cases has been presented. It has been observed that chlorpropamide is a potent hypoglycaemic agent of considerable clinical value. A few side effects were observed. Although available data are not adequate enough to comment further, yet it can be suggested that chlorpropamide may not be of much value in the 'thin type' of insulin deficient diabetics, and that it can exert good control on average diabetic patients when used in dosage smaller than that of carbutamide and tolbutamide.

Acknowledgment

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SERUM GLUTAMIC OXALACETIC TRANSAMINASE IN ACUTE MYOCARDIAL INFARCTION AND HEPATITIS

G. ACHARI, M.B.B.S., PH.D.
Professor & Head of the Department of Pharmacology
M. DAS, M.B.B.S., M.R.C.P.
Professor of Medicine
AND
C. K. NARAIN, M.B.B.S.
P. W. Medical College, Patna

Human serum contains several enzymes connected with the process of transamination. Perhaps the most important and extensively studied of these enzymes is the serum glutamic oxalacetic transaminase (S.G.O.T.) LaDue, Wroblewski and Karmen (1954) demonstrated that there is considerable rise in this enzyme after myocardial infarction. A large number of studies has indicated the diagnostic value of this laboratory investigation in a number of clinical conditions, e.g., myocardial damage, hepatocellular necrosis, myositis, rheumatic carditis and any process associated with active damage to skeletal or cardiac muscle (Molander, Wroblewski and LaDue, 1955 ; LaDue and Wroblewski, 1956 a, 1956 b).

S.G.O.T. values in a number of cases of myocardial infarction and hepatitis, determined by the colorimetric method (Cabaud *et al*, 1956) are reported in this paper. The striking advantage of this method over other methods of estimation of S.G.O.T. is that only a simple photometer is required and no additional enzymes have been added. Dubach (1957 a, b and c) adopted this method, and in his 1100 determinations of S.G.O.T. he found accurate and consistent results.

Material and Methods

Observations were made upon 15 cases of cardiac infarction (Table 1), 16 cases of hepatitis (Table 2) and 8 cases of amoebic hepatitis (Table 3). Specimen of venous blood was collected. The colours of the dinitrophenyl hydrazone of oxalacetic acid were matched in Unicam S.P. 500 Spectrophotometer at 520 mμ.

Estimation of normal level of S.G.O.T. was done in normal adults giving a range of 6-36 units with a mean of 16·5±4·47.

The cases of cardiac infarction were diagnosed clinically and confirmed with the help of E.C.G. The lowest value of S.G.O.T. recorded was 42 units/ml. of serum and the highest 320 units/ml. of serum, i.e., much higher than the normal value.

Table 1—Showing S.G.O.T. Values in 15 Cases of Myocardial Infarction

Case No.	Observed S.G.O.T. value		Result
	Units/ml.	Time after onset of infarction	
1	122 units	16 hrs.	
2	110 ,,	16 ,,	
3	94 ,,	24 ,,	
4	80 ,,	22 ,,	
5	320 ,,	36 ,,	Died
6	180 ,,	20 ,,	
7	200 ,,	21 ,,	
8	82 ,,	18 ,,	
9	100 ,,	72 ,,	
10	60 ,,	72 ,,	
11	120 ,,	60 ,,	Died
12	44 ,,	60 ,,	
13	42 ,,	96 ,,	
14	100 ,,	12 ,,	
15	72 ,,	42 ,,	

Higher levels of S.G.O.T. after myocardial infarction in 90-98 per cent of cases have been reported by Reinhold (1957). The highest value recorded may be 20-fold increase above the normal level. Comparable increase does not occur in cases of myocardial ischaemia without infarction or in pulmonary infarction.

Myocardial infarction is usually diagnosed with the help of E.C.G. Estimation of S.G.O.T. is an additional tool in confirming the diagnosis. The chemical method of estimation of S.G.O.T. in serum is easy, cheap, and reliable, and can be done in any laboratory which is reasonably well equipped. In differential diagnosis of angina and myocardial infarction, serum S.G.O.T. is of considerable help, because in cases of angina there will be no rise in serum S.G.O.T. values.

S.G.O.T. values in 16 cases of infective hepatitis are given in Table 2.

In all cases of acute infective hepatitis admitted to the hospital, S.G.O.T. estimation was done at an interval of 24 hours. Patients having S.G.O.T. level higher than 180 units died. The six cases (No. 7-12 in Table 2) passed into acute hepatic failure and high S.G.O.T. levels were recorded. It is inferred that the greater the damage to the liver cells, the higher is the S.G.O.T. level. Similar observations have been made by Davies and Wilkinson (1958) and Madsen, Bang and Inverson (1958).

In a further series of experiments S.G.O.T. estimations were undertaken in 8 cases of amoebic hepatitis. The patients were diagnosed as amoebic hepatitis by clinical signs as well as by aspiration of pus from the abscess cavity. The results are presented in Table 3.

TABLE 2—SHOWING PLASMA BILIRUBIN AND S.G.O.T. VALUES IN 16 CASES OF INFECTIVE HEPATITIS

Case No.	Plasma bilirubin (mg. %)	S.G.O.T. (units/ml.) on 10th day of disease	Result
1	18	74	
2	10	64	
3	22	110	
4	8	60	
5	20	100	
6	16	80	
7	24	310	Died
8	32	200	do.
9	28	180	do.
10	40	200	do.
11	46	190	do.
12	36	200	do.
13	22	160	
14	36	130	
15	40	128	
16	20	132	

TABLE 3—SHOWING S.G.O.T. VALUES IN 8 CASES OF AMOEBIC HEPATITIS

Case No.	SI.G.O.T. (units/ml.)	Result
1	38	Survived
2	40	"
3	48	"
4	84	"
5	64	"
6	88	"
7	70	"
8	96	"

All the 8 cases studied showed rise in S.G.O.T. values. Cases 1, 2 and 3 developed abscess of the liver, shown by aspiration of large amounts of anchovy sauce pus. It was observed that the other 5 cases of amoebic infection who had not developed signs of abscess formation showed greater rise in the S.G.O.T. activity than the 3 cases who had developed abscesses.

SUMMARY AND CONCLUSIONS

1. Serum glutamic oxalacetic transaminase (S.G.O.T.) has been estimated in 15 cases of cardiac infarction, 16 cases of infective hepatitis and 8 cases of amoebic hepatitis.

2. The results show that in all cases of myocardial infarction there is an increase in S.G.O.T. levels. It has also been seen that S.G.O.T. levels are elevated in diseases of the liver where there is parenchymal involvement. Increase in S.G.O.T. levels suggests a bad prognostic significance both in cardiac infarction and hepatitis.

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PRACTITIONERS' SERIES

TREATMENT OF INFECTIVE HEPATITIS

P. N. LAHA, M.D. (PAT.), M.R.C.P. (LOND.), M.R.C.P. (EDIN.), D.C.H. (ENG.)

Professor of Medicine

G. R. Medical College, Gwalior

INTRODUCTION

Even today, in the days of chemotherapy and antibiotics, there is no specific drug against the virus of infective hepatitis. This does not warrant a nihilistic attitude towards its treatment as much has been learnt which can provide complete recovery in the minimal possible period. The natural history of the disease varies according to its clinical types which range from slight malaise with no overt jaundice to the very severe variety culminating in hepatic coma. The treatment detailed below applies mostly to the commonly recognised clinical form of the disease. There are no definite clinical differences between serum and infective hepatitis; for the distinction is based on the history of contact, or injections, or on a study of the method of spread in an epidemic. The treatment for both forms of hepatitis is practically the same.

Prevention

Owing to the lack of recognition of virus carriers, diverse methods of transmission, anicteric type of the disease, and the resistance of viruses to destruction, prevention of this disease becomes rather a difficult problem.

Infective hepatitis is usually spread by faecal contamination of food and water. The blood of patients suffering from this disease is also infectious. Hence, proper precautions must be taken to prevent dissemination from this source. Good sanitation, proper disposal of faeces and blood of patients, and simultaneous control of insect vectors are to be ensured. Exercise of adequate care does not mean strict segregation of the patient from close contact with members of the family. Blood products, or unsterilised parenteral inoculations are the main source of serum hepatitis. They must, therefore, be avoided in order to prevent serum hepatitis.

Intramuscular injection of normal human serum γ-globulin, when administered after exposure or upto six days before the onset of symptoms, can prevent infective hepatitis virus infections. The dose is 0·02 ml. per Kg. of body weight. But it will not protect against serum hepatitis virus infections.

Rest

Activity increases general bodily metabolic processes, which again increase the work-load on the liver. A diseased liver needs rest, as any other diseased organ would. Hence, bed rest has been enjoined in the treatment of infective hepatitis. It has been noted that the longer the interval between the appearance of the first symptom and the institution of treatment, the more prolonged is the course of the disease. Nevertheless, the question of bed rest in the treatment of infective hepatitis is still the centre of controversy. Some workers had been unable to find that unrestricted physical exertion allowed to patients, discharged with the minimal residual abnormalities, resulted in an increased incidence of late residuum that what was found in a comparable group discharged as 'cured'. The author has observed that if physical exertion is condoned too early in convalescence, it may precipitate relapse. Clinicians are in agreement that it is desirable to maintain bed rest during the acute phase of the illness. It would seem wise to continue rest in bed until convalescence is fully established, and until overt icterus has cleared. When the serum bilirubin has fallen below 3 mg. per cent and the other liver function tests are approaching towards normal values, a cautious check on mild physical activity may be warranted ; and, if liver function tests continue their improvement, this programme of ambulation may be slowly advanced. But if clinical and/or laboratory evidence of recrudescence appears, the patient must return to bed. When the patient has a good appetite, no jaundice, with liver which is not enlarged or tender, serum bilirubin below 1·5 mg. per cent, liver function tests negative or only weakly positive, he may be discharged from the hospital with advice to increase his activity gradually. It would be wise to check the patient every 3 to 4 months for about one year.

Diet

Till recently, a diet high in calories containing large amounts of protein and carbohydrate but low in fat has been advocated. Most observers agree that a high protein diet is beneficial. The protein intake should be as high as possible, but consideration must be given to the appetite of the patient. Too much protein should not be forced upon the patient when his appetite is poor. 100 to 150 g. of protein per day for an adult can be considered as the optimum. This should include protein of both vegetable and animal sources. Fat is to be given in moderate amounts and should be neither restricted nor forced upon. It should consist of about 100 g. a day for an adult patient. Carbohydrate should be between 300 to 500 g. a day. The total daily calorie intake should be in the neighbourhood of 3000 to 3500 calories for an average adult. The diet prescribed for the patient should be well-balanced, palatable, nutritious and readily digestible. If vomiting is a difficult problem, intravenous feedings may be necessary. But intravenous feeding is beset with difficulty of providing sufficient calories in a reasonable volume of fluid. Hence it would be advisable to combine oral (gavage) and intravenous feedings. If there is much nausea dramamine (dimenhydrinate U.S.P.) 50 mg. twice or thrice daily before the meals may be helpful.

Supplementation of the diet with vitamins is not necessary, provided patients are on a balanced diet containing fresh foods. But if the patient is on parenteral feedings, vitamin-B complex and ascorbic acid should also be given. If the appetite is poor, vitamin B_{12} given in doses of 50 micrograms intramuscularly a day and folic acid 5 mg. thrice daily by mouth may stimulate appetite, and thereby shorten the course of the disease.

After an extensive clinical trial it has been found that supplementary amino-acids and lipotropic agents, the 'methyl donor compounds' choline and methionine are not of any benefit. A

well-balanced protein ration contains them in normally adequate amounts.

Drugs

No viricidal drug is available for the treatment of infective hepatitis. Generally speaking drugs should be used sparingly in the treatment of this disease, except symptomatically. Aspirin or sodium salicylate may be given for headache. Penicillin and the sulphonamides are without effect on the course of the disease, but if the patient develops or harbours an intercurrent infection requiring their use they may be administered without any risk. Drugs which are liver poisons or which tax liver resources should be withheld. They are opiates, particularly morphine, and barbiturates, especially the short-acting, long chain derivatives, e.g., pentobarbitone and the thiobarbitones, which are mobilised largely by the liver. Alcohol, and ammonia-containing compounds, e.g., ammonium chloride should be avoided. Paraldehyde is handled to some extent by the liver and this process is depressed in liver disease. Hence, this drug should also be avoided. For restlessness and insomnia sodium bromide and chloral hydrate are recommended.

Antibiotics—There is general agreement that broad-spectrum antibiotics should not be given to patients with the usual type of infective hepatitis. But in critically ill patients they are definitely indicated, and should be given in divided doses of 1 to 2 g. daily by mouth or stomach tube, because an appreciable number of such patients survive. It appears that the broad-spectrum antibiotics play a part in the improved survival although their mode of action is not clear. Possibly they have some direct metabolic action, other than their antibacterial properties, which serves to protect the liver. Some workers have suggested this possibility, particularly when anoxia of the liver appears to play an important role. It is more likely that the beneficial role of the antibiotics is related to its property of sterilisation of the intestinal tract. It seems not unlikely that the bacteria in the intestinal tract, or the products of their metabolism, play a role in the pathogenesis of hepatic coma.

Steroids—It has been found that the administration of corticosteroids or ACTH to patients of infective hepatitis produces a sense of well-being, increases appetite and the serum bilirubin level diminishes sharply. But the improvement in the results of other laboratory tests for hepatic function does not run parallel to the rate of diminution of serum bilirubin. The mechanism of the rapid fall of serum bilirubin level is not clear. Some authorities have recommended the routine use of these drugs for about 9 days, beginning with 400 mg. of cortisone daily, diminishing the dose gradually, until a dosage of 50 mg. daily is reached. But it has to be mentioned that the decline of serum bilirubin need not mean a quicker termination of the disease. While the degree of hyperbilirubinaemia is one of the indices of the severity of the initial attack of hepatitis, there is obviously much more in this disease than in jaundice. Failure of other tests for hepatic function to return to normal more quickly in treated cases than in those not being treated with corticosteroids or ACTH throws doubt on the likelihood that any significant change in the course of the disease occurs with these drugs. In a disease such as infective hepatitis which tends towards spontaneous recovery, the benefit derived from the use of corticosteroids or ACTH does not sufficiently warrant their use. According to some authorities, the occurrence of relapse is more frequent when a corticosteroid or ACTH has been used. There are, however, conflicting reports as to the frequency of relapse.

In summary, it can be said that notwithstanding its favourable influence on appetite and well-being, the disappearance of jaundice, the lack of a significant shortening in the duration of disease, the occurrence of certain untoward side-effects, and the frequency of relapse does not justify the routine use of the steroid hormones for hepatitis of average severity. Nevertheless, there are certain indications justifying their use, e.g., (1) when the disease is severe and progressive, (2) when vomiting is intractable, (3) when the disease is of such severity that hepatic coma is imminent or present, and (4) in patients with cholangiolitic hepatitis, who, if treated early in the course of disease with corticosteroid or ACTH, frequently respond well, with a sharp improvement in the excretory function, with all in serum bilirubin and alkaline phosphatase levels, and with eventual recovery. When used, they should be continued until maximum improvement has been obtained, and then the dose is gradually tapered off.

Sex hormones—Trial has been given to testosterone propionate and progesterone in infective hepatitis but there is no evidence that they can be assigned any place in the treatment of the disease.

Hepatic Coma—A Complication

The vast majority of cases of infective hepatitis proceed to uneventful recovery but a small percentage of cases are fulminant in nature and follow a downhill course, culminating in the most serious and dreaded complication of 'hepatic coma'. The

mortality is high. Factors underlying this complication are not fully known. It may well represent several different pathologico-physiochemical states which have not yet been identified. Clinically whatever be the cause or causes of hepatic coma, the patient demands special care, for it is a grave medical emergency. All dietary proteins should be stopped and the patient should have at least 1600 calories daily. These can be supplied as glucose drinks or as intragastric drip of 20 per cent glucose. When required, 25 per cent glucose can be given intravenously. Care must be taken to avoid fluid overloading ; hence, the urinary output must be measured and charted and the jugular vein filling examined regularly and noted, and the lung bases auscultated before each administration of intravenous fluid.

Intestinal organisms are capable of breaking down protein to ammonium amines and possibly other toxic derivatives. There is a theory that a toxic nitrogenous substance, formed in the intestine by bacterial action on protein, is at least partly responsible for the altered cerebral metabolism of hepatic coma. If, therefore, the symptomatology of hepatic coma can be ascribed to the absorption of such substances from the intestine, it would be reasonable to administer wide-spectrum antibiotics. Oral neomycin is a satisfactory antibiotic for this purpose. The drug does not commonly lead to the emergence of resistant *Esch. coli* and staphylococci, and does not possess the disadvantage of causing diarrhoea common to tetracyclines, very little of neomycin is absorbed. The dose is 6 g. daily, in divided doses. Free bowel action must be ensured by enemata and routine purgation with magnesium sulphate.

Drugs which are hepato-toxic or which tax liver resources should be avoided during precoma and coma stages.

Glutamic acid therapy is based on the supposition that it will react with the ammonium, forming innocuous glutamine. This ammonium is derived from bacterial action on protein in the gastro-intestinal tract, and is believed to be responsible in the pathogenesis of hepatic coma. Doses of about 20 to 25 g. of sodium glutamate daily has been recommended. Some evidence suggests that glutamic acid is the most effective drug in cases of coma, precipitated by bleeding into the intestine where absorption of blood together with hepatic anoxia seems to be the principal factor. Where there has been no intestinal bleeding, glutamate therapy seems less likely to prove effective. Even then, it would be advisable to give the drug a trial for a few days when all other methods of treatment have failed.

In hepatic coma good results have been noted with large doses of a corticosteroid , such as cortisone 300 to 1000 mg. daily.

Other supportive measures have to be used. Oxygen may be advisable. Every effort should be directed towards maintaining the blood pressure with small blood transfusions or injections of vasopressor drugs.

Very good nursing care is essential.

SPECIAL ARTICLE

DIAGNOSIS AND TREATMENT OF EARLY TRACHOMA

A. D. GROVER, M.S.

M. U. Institute of Ophthalmology, Aligarh

Trachoma with associated conjunctival infections is a common disase of the eye. Seventy-five to 80 per cent of total blindness in Egypt is due to complications or sequelae of acute conjunctivitis (Maxwell, 1951). In its early stages, trachoma is readily amenable to medical treatment. Hence, an early diagnosis is of great help in avoiding the late complications and sequelae which are responsible for visual disabilities. Clinical features of advanced trachoma, i.e., follicular hypertrophy, cicatrization and pannus, are so characteristic that they present no difficulty in diagnosis. Trachoma at onset or early in its evolution often presents a diagnostic problem, and for proper diagnosis of such cases the old dictum holds good, viz., "to know trachoma well one must have examined, treated and followed up thousands of cases".

The incidence of trachoma in the rural areas of Aligarh district is about 80 per cent. The age of onset is 1 to 3 years. Trachoma is in the progressive stage (Tr. I and II) in the pre-school children, the older children show the regressing trachoma (Tr. III), and by the age of about 10 years a majority of them go to stage IV, i.e., healed trachoma. The course of trachoma is slightly more severe and prolonged in the female.

This review summarises the clinical signs of diagnostic value in early trachoma and discusses briefly its treatment. This is based chiefly on our experience with trachoma in Aligarh district.

Trachoma Stage I : It is commonly seen in infants and young children and is usually associated with subacute or acute bacterial conjunctivitis which may mask the clinical picture of trachoma to some extent. The upper tarsal conjunctiva is the principal diagnostic area where immature follicles first appear. Trachomatous

pre-follicles are seen embedded in the oedematous conjunctiva. They are surrounded by fine papillary hypertrophy and appear as uniformly distributed, round, slightly elevated yellowish spots against a reddish, velvety background (Fig. 1, *vide* Plate).

The involvement of upper tarsal conjunctiva forms the chief and sometimes the only available sign of early trachoma, as the children usually do not permit the examination of the upper limbus. Whenever a trachoma stage-I child permits the examination by slit lamp or uniocular loupe, epithelial keratitis, pannus and even small limbal follicles are seen (Singh and Grover, 1959). Such corneal changes are valuable aids in diagnosis.

Trachoma Stage II : The signs of trachoma are now well established and grossly visible. The follicles are fully developed and appear as raised yellowish areas on the tarsal conjunctiva. They are maximum in the upper fornix and the upper tarsal conjunctiva, but the lower fornix and the lower tarsal conjunctiva are also involved. The trachoma follicles are soft and easily expressible—a fact which can be well demonstrated if a platinum loop is passed across the follicles in an anaesthetised eye. Papillary hypertrophy is also quite marked and appears as small solid-looking red areas specially on the tarsal conjunctiva. Sometimes the papillary hypertrophy may be so abundant that it may mask the follicles. (Papillary type of trachoma Tr.-II b, McCallan, 1936).

The corneal involvement is now marked and the changes, pannus and keratitis, are visible with the naked eye or with binocular loupe (Fig. 2, *vide* Plate). Follicles at the limbus also become prominent and even may be confluent forming an arc at the limbus. The limbal follicles are pathognomonic of trachoma, and they in turn leave behind equally pathognomonic marks the "Herbert's pits" (Fig. 3, *vide* Plate).

Differential Diagnosis

1. *Non-trachomatous follicular diseases*:

Presence of follicles on the upper tarsal conjunctiva should be considered suggestive of trachoma, but differentiation has to be made from folliculosis and follicular conjunctivitis. In folliculosis the upper tarsal conjunctiva is often spared and the follicular hypertrophy is marked in the fornices and the lower tarsal conjunctiva (Figs. 4 and 5, *vide* Plate). Even when the folliculosis involves the upper tarsal plate there is no papillary hypertrophy unless secondary bacterial infection has supervened (Thygeson, 1957). The middle third of the tarsal conjunctiva is usually spared and the follicles are present at the angles only (Fig. 6, *vide* Plate). In other follicular conjunctivitis also the brunt of the disease is in the fornices and the lower tarsal conjunctiva. Biomicroscopy of the limbus will show no pannus formation. Acute follicular conjunctivitis, such as inclusion conjunctivitis, pharyngoconjunctival fever, epidemic keratoconjunctivitis, Beal's and Newcastles' disease, do not lead to vascularisation of the cornea. Corneal involvement in epidemic keratoconjunctivitis is totally dissimilar to that of trachoma. Slit lamp is indispensible in differentiating these conditions from trachoma.

2. *Bacterial conjunctivitis*:

Infants and children, especially in summer months, suffer from repeated attacks of sub-acute or acute bacterial conjunctivitis (Koch-Weeks, pneumococcus, Morax-Axenfeld, etc.). Oedema and hyperaemia of the upper tarsal conjunctiva mask the important signs of early trachoma. The diagnosis in such cases can be made by slit lamp examination of the upper tarsal conjunctiva when follicles of trachoma may be seen buried in thickened conjunctiva. Examination of one or more conjunctival scrapings for cytology and inclusion bodies may aid the diagnosis. Absence of the latter does not negative the diagnosis, as only 13 per cent of the trachoma stage-I cases in whom single scraping was taken from upper tarsal conjunctiva showed inclusion bodies (Agarwal, 1957). The most satisfactory method of diagnosing such cases is to treat the conjunctivitis for a few days when oedema of the conjunctiva will subside and re-examination of the upper tarsal conjunctiva will decide the diagnosis.

3. *Spring catarrh*:

The palpebral type of spring catarrh may be confused with papillary type of trachoma stage-II. The milky hue of the upper tarsal conjunctiva and the flat topped, hard papillae arranged as cobblestones are quite characteristic of spring catarrh. On keeping the upper tarsal conjunctiva exposed for some time or by rubbing it with a swab, thick, tenacious and dirty-looking discharge can be obtained which on microscopic examination shows a large number of eosinophils—the features pathognomonic of spring catarrh. The cornea does not show pannus even in cases of limbal type of spring catarrh (Fig. 7). Cases of spring catarrh superimposed on healed trachoma will show pannus in addition to the characteristics of spring catarrh. In these mixed cases the diagnosis is guided by the distribution of the vegetations of spring catarrh which do not invade the fornices or the lower tarsal conjunctiva, the absence of

FIG. 7—SHOWING LIMBAL SPRING CATARRH WITH VEGETATION AT THE UPPER LIMBUS. THERE IS NO PANNUS

yellow follicles even on slit lamp examination and the microscopic examination of the discharge for eosinophils. Itching is a very prominent symptom of spring catarrh and it may have a seasonal variation, being marked in hot and damp weather.

4. *Mixed infections*:

Mixed infections may occasionally pose a problem for diagnosis. Follicular conjunctivitis with phlyctenulosis will present follicles with pannus. But the distribution of the pannus, with its sector-like arrangement, and the frequent presence of a limbal phlyctena will guide the diagnosis.

Difficulty may arise when a follicular disease gets superimposed on healed trachoma. In these cases follicles will be associated with pannus, and the distribution and the character of follicles will clinch the diagnosis. Trachoma follicles are characteristically soft, opaque and easily expressible while non-trachomatous follicles are hard, translucent and difficult to break. Microscopic examination of the material obtained by expression of follicles will show degenerative changes (macrophages, Leber cells, and fragmented cells with bare nuclei) in trachomatous cases only (Thygeson, 1955 ; Agarwal and Saxena, 1955). A follow-up of these cases can further aid the diagnosis. The trachoma follicles take shorter time (months) to disappear, while those of chronic follicular conjunctivitis (Axenfeld type) and the folliculosis take years (Ocampo, 1955).

On the basis of these characteristics of trachoma follicles it is possible to make a reliable clinical diagnosis by gross examination alone in some 90 per cent cases. In the remaining 10 per cent help may be obtained from the cornea and upper limbus (Thygeson, 1957). Slit lamp examination is of great help in distinguishing trachoma from nontrachomatous follicular disease. Laboratory examination is of help in doubtful cases and in recognition of bacterial infections.

TREATMENT

Trachoma by itself is slightly contagious. Bacterial conjunctivitis is potentially more dangerous to the eye and forms the epidemiological background of trachoma. The treatment of bacterial conjunctivitis will help a great deal in arrresting trachoma and minimising its severity (Reinhard, 1955). The anti-trachoma projects aim mainly at the control of the seasonal attacks of bacterial conjunctivitis and thus indirectly control trachoma and its complications.

With the advent of sulphonamides and antibiotics world-wide interest has been aroused in the treatment of trachoma. W.H.O. Expert Committee on Trachoma (1952) gave its opinion that in the majority of cases the trachoma can be cured by chemotherapy and antibiotics alone. The committee recognises that the most effective treatment is the simultaneous use of certain antibiotics with sulphonamides,—the former is applied locally and the latter given orally. Despite the clinical improvement the tissue can harbour the virus for a long period, and this is of fundamental importance for permanent cure and control of trachoma. The treatment should be spread over a long period and the patient should be followed up, for a period of three to six months after cessation of treatment, as the infiltration (follicles and papillae) takes a longer time to resolve.

Various antibiotics have been tried by different workers (Braley and Sanders, 1949 ; Nataf, 1950 ; Mitsui and Tanaka, 1951 ; Agarwal and Gupta, 1954 ; Tabone, 1955). Aureomycin, terramycin, chloromycetin, achromycin, erythromycin are all found to be effective, though opinions are divided as regards their degree of effectivity. These antibiotics act not only on the secondary bacterial infections but the high percentage of cure of trachoma obtained by their use indicates that they have a specific action on the trachoma itself (Maxwell, 1957).

A course of sulphonamides, 40 to 50 mg. per kg. of body weight divided into four doses over a period of 1 to 3 weeks, according to the severity of the case, along with an antibiotic (terramycin, aureomycin, chloromycetin ointment or achromycin oily drops) applied 3 to 4 times a day for the first week and then twice daily for sixty days, gives very good results.

Surgical treatment is now becoming superfluous and even harmful in most cases as it accentuates scarring which with modern medical treatment can be reduced to a minimum. W.H.O. Expert Committee on Trachoma (1952) gave its opinion that "as more effective medical treatment of trachoma has become available, mechanical adjuvants become less necessary. Very gentle and non-traumatising expression of soft follicles is permissible, as also is the painting of the conjunctiva with slightly caustic solutions, such as one or two per cent silver nitrate or copper sulphate. These measures must be considered as complimentary to purely medical treatment and as unjustified except in a limited number of cases."

Surgery is, of course, still required for the cicatricial sequelae of trachoma (trichiasis, entropion, corneal opacity, etc.).

Summary

The clinical diagnostic signs of early trachoma are described. Differential diagnosis from other follicular conjunctival diseases, bacterial conjunctivitis and spring catarh is discussed. Efficacy of medical treatment and the limited application of mechanical measures are stressed.

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PUBLIC HEALTH

CANINE RABIES

JAGJIT SINGH, M.B.B.S., D.P.H., P.H.S.

Simla

Rabies, also called lyssa, hydrophobia, canine madness, rage (French), tollwut, hundswest wasserschen (German) and rabbia (Italian), is a disease to which all warm-blooded animals are susceptible. In a large majority of cases it affects dogs, but cats, horses, cattle, foxes, deer, pigs and sheep may also suffer. So wide is the host range of this virus that in a country in which rabies is endemic, the bite of any animal must be suspected.

The disease is important from the point of view of public safety, for persons bitten by rabid dogs are very liable to contract hydrophobia, and unless vigorously treated they will almost certainly die.

The most common reservoir of infection is the canine group of animals. It may sometimes exist in dogs in a locality for a long time without giving rise to human cases.

History

Rabies has been known since the dawn of civilisation. Stone murals from ancient Rome, Greece and Egypt depict mad dogs. Democritus in 5th century B.C. described the clinical picture of the disease. Aristotle in 322 B.C. gave an account of the disease in the dog and other domestic animals. The Atharva-Veda also mentions it.

Until 1880 rabies was also believed to develop spontaneously and was attributed variously to hot food, deficiency of drinking water, unsatisfied sexual desire and severe nervous excitement.

Distribution

There is no part of the earth inhabited by man and other terrestrial animals, where rabies cannot potentially exist. It occurs quite commonly in Greenland, Iceland and other Artic countries. In the tropics and sub-tropics, where jackals and wild dogs abound, a specially virulent form is sometimes prevalent. In Trinidad and Jamaica, the vampire bat has been found to play an important role in its dissemination. Australia is said to be free from this disease, and this freedom is ascribed to the rigid quarantine restrictions which have been imposed upon dogs.

Rabies has been stamped out from Great Britain since 1903 except for a small outbreak in 1919, due to an animal being smuggled into the

country by aeroplane. In the U.S.A. only 10 states are considered to be completely free from the disease. It is common in France, Belgium, Russia and India.

Major epizootics develop from time to time but the cycle is not regular. Epizootics are short-lived in any one place, rarely lasting more than a year. After an epizootic subsides, sporadic cases continue to occur unless rigid control measures are adopted.

Breed, age, sex and climatic conditions have no influence on susceptibility but the incubation period in young animals is usually of shorter duration.

Transmission

Natural infection, in most of the cases, is through the bite of a rabid animal, sometimes by the virus being conveyed by licking a recent wound or abrasion. The infectivity of the saliva is the greatest immediately after the appearance of the symptoms but may exist in a slighter degree from 2 to 4 days before the onset. There is at present no evidence to indicate that the dog can act as a symptomless carrier.

The danger of a bite depends upon the virulence of the saliva, on the extent and depth of the wound and on the abundance of lymphatics and nerves in the vicinity of the bite.

Causal Agent

The causal agent is a neurotropic virus. This can only multiply in the living animal, but it retains its virulence in the open and in a carcase, for a considerable length of time. When it is injected into the tissues, either from a bite or artificially, it passes along the great nerve trunks and reaches the central nervous system.

The virus is found constantly in the brain and spinal cord of the infected animal.

It is often found also in the salivary glands and the saliva. The isolation of the rabies virus from the brain of an infected animal does not necessarily indicate that its saliva also contains the virus and is infective. It is occasionally present in the peripheral nerves, lachrymal gland and pancreas. It is never found in the blood, lymph or urine.

Diagnosis is made chiefly by the finding of Negri bodies in the cells of the hippocampus major or in the Purkinje's cells of the cerebellum. These bodies are found in 87 per cent of the rabid dogs that lived over 3 days after the onset of symptoms and in 48 per cent of the dogs dying of paralytic rabies. Subdural inoculation into a rabbit of an emulsion of the cord of a dog dead of rabies is the most certain method of diagnosis.

Clinical Features

In the dog, the incubation period is rarely less than 10 or more than 90 days. The latent period of over 200 days has been noted.

The course of the disease may be divided into 3 stages:

1. Premonitory stage—There is a change in the disposition of the animal. It is easily excited.

2. Stage of excitement—It is restless and may become furious and even show signs of delirium. It rushes about attacking every object and biting and inoculating men and animals. It runs straight.

3. Stage of paralysis—It soon sets in, starting in the hind limbs and then becoming general.

If all these stages are noticed, it is a case of furious rabies. If the first two stages are transient or absent then it is dumb or paralytic rabies. The course of the disease is always rapid. Death occurs in 2 or 3 days.

Presence of Negri bodies in the brain of a dog is the surest evidence of the existence of rabies. The whole of the head of a suspected animal packed in ice should be sent to the laboratory for examination.

'Furious' Rabies

During the early stages of the disease, a dog may appear quite normal and look even more affectionate than usual. Despite its friendly actions, the dog gets easily irritated, especially if restrained in any way. If picked up, it may immediately try to break away, and if not promptly freed may bite savagely. Restlessness and excitement are other early symptoms. It also has a tendency to eat sticks, straw, earth, and other indigestible material. After a period of one to three days, the dog may become extremely vicious, and bite any living thing that gets in its way, even its master. The eyes are glazed and constantly wide open. Often there is a peculiar howl-like bark. During this stage, the dog usually strays away from home, roams about the countryside, and attacks any person or animal it sees. Within a few days, paralysis develops, the first sign of which is a wobbly or staggering gait. Paralysis then extends to the rest of the body until the animal cannot get up. Dogs with this type of disease may live as long as 6 days after developing symptoms.

'Dumb' Rabies

In this type of the disease, the early symptoms are sleepiness and melancholia. The dog tries to hide itself or get away to some quiet corner. These symptoms are soon followed by paralysis of the jaw, throat, tongue and leg muscles. There is

no irritability or tendency to bite, but persons may be exposed to rabies when they try to look at the animal's throat or while giving medicine. Animals so affected seldom live for more than 3 days after developing symptoms.

In dogs, the 'furious' form often manifests itself. Towards the end, paralysis sets in. In rabbits, the 'dumb' or paralytic type of disease is always found.

In most cases, rabid dogs show symptoms of both types of the disease, that is, a period of restlessness, excitement and irritability, during which they appear friendly and unusually alert, followed by rapid progression to paralysis of the dumb rabies type. Some animals affected with rabies die suddenly without manifesting any symptoms of illness. In other cases the first symptom is a convulsive seizure during which the animal may die.

All dogs with rabies are relatively insensitive to pain. The corneal reflex is lost early. Excitation of muscles causes tic-like contractions, tremors and occasionally general convulsions. Muscular reflexes are increased. Trismus may occur. No fear of water is noticed. Except the terminal rise, the temperature is subnormal.

Attendants should always be on the watch for dogs with personality changes, perverted appetites, insensibility to pain, and throat paralysis. There is considerable confusion, because many dogs with house dog disease develop encephalitis, and show symptoms similar to those of rabies. Rabies generally has a downhill course, while encephalitis due to house dog disease, most often manifests itself in chorea jerks and a series of fits with intermittent periods of normalcy. But there have been many cases of encephalitis in house dog disease so similar to rabies that only mouse or rabbit inoculation tests could differentiate them.

In some cases unusual behaviour, such as a depraved sexual appetite, arching of the back with the head lowered between the hind limbs, may be seen. Postmortem examination shows nothing very characteristic. The stomach is often empty, although in 'furious' rabies, it may contain foreign bodies such as pieces of wood or bone, stones, hair, feathers, etc. The urinary bladder contains but little urine which as a rule contains dextrose. Occasionally there is acute catarrh of the mucosa of the respiratory and digestive organs, hyperaemia of the liver, spleen and kidneys, congestion or oedema of cerebral and spinal meninges and grey substance of the brain.

Treatment

Rabies is an infection which in the ordinarily accepted meaning of the term is curable. The infection may be overcome and the animal may survive so long as the lesions due to tissue infection do not become too gross. The striking peculiarity of rabies lies not in the incurability of the disease but in the fact that symptoms do not appear until the invasion is already in a very advanced stage.

Animals that have been bitten are seldom given the Pasteur treatment but where expense is no objection the percentage of recoveries among them is not less than in the case of human beings (99 per cent), provided it is undertaken early.

Control of Rabies

Control depends fundamentally on measures which are directly or indirectly effective in reducing the stray dog population to the density below the critical level required to maintain continuous propagation of the virus by passage biting. The major steps in this control are—

1. Destruction of all ownerless, stray dogs. The following methods are used:
   - (*i*) Use of lethal chambers.
   - (*ii*) Injection of saturated magnesium sulphate solution (5 to 20 c.c.) or prussic acid (5 to 10 c.c.) into the heart of the dog.
   - (*iii*) Shooting.
   - (*iv*) Feeding them with 5 gr. of strychnine tablet wrapped in a small quantity of 'halwa'. This is an inhuman way of killing dogs and should be discouraged.
2. Registration and licensing of all pet dogs in a municipality or district board.
3. Muzzling and restraint of all pet dogs in a municipality or district board.
4. Compulsory notification of all cases of rabies.
5. Education of the public regarding rabies and its prevention.
6. Quarantine of all imported dogs for a fixed period.

It has been demonstrated in many parts of the world that rabies can be controlled, even eradicated, in limited geographical areas by strict quarantine measures applied to the dog population.

7. Prophylactic immunisation of dogs against rabies was suggested by Pasteur and has been practised with good results by some investigators. Immunity by this method (using one large dose of phenolised fixed virus) probably lasts a year. It is said that immunity following repeated injections lasts longer (4 to 7 years).

Demonstration of the value of preventive vaccination of dog has afforded a new and extremely valuable additional method of control. By enforcing mass vaccination of dogs, it is possible to reduce the proportion of susceptible dogs in an area. This in turn decreases the chances of chain propagation. Vaccination of dogs, therefore, has become an important feature of the control programme.

MEDICAL EDUCATION

MEDICAL EDUCATION IN THE UNITED STATES OF AMERICA

P. V. RAMANARAO*, M.D., D.P.H.

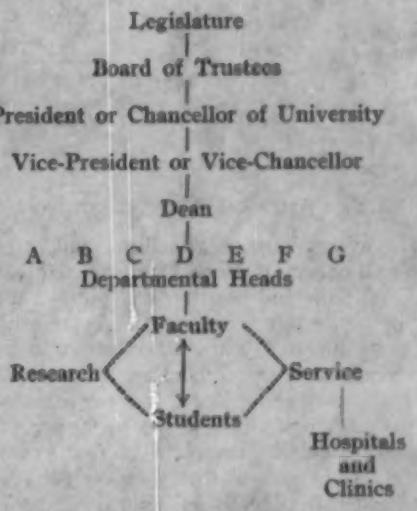
Department of Bacteriology
Osmania Medical College, Hyderabad (A. P.)

Introduction

Many in India are not quite aware of the system of medical education in the U.S.A. as our present system is based on the old British system. This paper presents a general account of medical education in America, the American medical student and his medical curriculum which may help clarify and extend our knowledge of the American system of medical education.

American Medical Institutions

There are at present 85 medical colleges in the U.S.A. which are associated with various universities distributed over the 50 States in U.S.A. Nearly 40 per cent are situated in the State of New York, Massachusetts, Philadelphia (Pennsylvania), Illinois and Ohio. A little over 50 per cent of the institutions are private and the rest are State institutions. The organisational set-up of the medical education can be simplified in the following chart in general terms though the individual patterns are different in different universities (Casberg, 1959).



Though for general administrative and academic purposes the above set-up holds good, the American Medical Association through its Council on Medical Education and the Association of Medical Colleges in America wield a lot of influence and lay down the basic policies of professional education, the National Examination Boards, standards for licensure and other changes brought about from time to time. And it should be recognised that the university's integrated atmosphere has sanctified and stimulated very much the higher learning and research in medical centres.

Besides the Dean of the Medical College, under the university vice-chancellor there are allied medical institutions like the dean of dental college, nursing college, director of the hospital, dean of veterinary college and dean of pharmacy college. The atmosphere makes these conducive to the development of allied medical professions as well.

The number of students enrolled in all the medical colleges is 29,473 (1957-58) (*J.A.M.A.*, 1958 b) and these receive instruction from 1934 professors and instructors. The teacher student ratio is thus about 1 : 15. The number of applicants in 1957-58 was 15,791 out of which a total number of 8,030 students were admitted. The ratio of applicants to admission is thus 1·9 : 1. The number of physicians passed out in the final year—6861.

The percentage of women students is 5·57 per cent. Besides the above there are a few special institutes for specialised training for the Army, Navy and Air Force.

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* The author was privileged to visit the Unittd States of America under the International Cooperation Administration (Technical Cooperation Mission in India) during 1958-59. He spent a whole year in the U.S.A., devoting part of his time in studying the various aspects of American medical education. Observations in this article are based on practical study at the State University of New York Upstate Medical Centre, Syracuse, New York, for six months, and also on the knowledge gained from the conference conducted at Syracuse for the benefit of the doctors from India on fellowship tour, under the joint sponsorship of the I.C.A., W.H.O. and the Rockefeller Foundation. During his stay he visited medical schools, hospitals and research centres in New York State, Boston, Baltimore, St. Louis and Kansas.—Ed., *J. Indian M. A.*

TABLE 1—SHOWING 1957-58 FIGURES (*J.A.M.A.*, 1958b)

Number of colleges	Number of applicants	Number enrolled in 1st year	Total in all number 4 years	Number graduated per year
85 (78 old+7 new)	15,791	8,030	29,473	6,861

THE AMERICAN MEDICAL STUDENT

The average age of a medical student entering a medical college is about 21 years. He is usually tall, well built and healthy, and puts on a tie and suit of a western gentleman. A majority (79·2 per cent) finish 4 years of college training after an 8 years' grammar school education before they enter the medical college. 40 per cent of them are married, and the rest (up to 60 per cent) get married before they complete the four year medical course. It is obvious that they complete a twelve year general educational course and obtain a bachelor's degree in arts or science. They are intellectually more mature than their Indian counterparts who are usually admitted when 17 or 18 years of age. The students are alert, intelligent and enthusiastic to learn. The students' life in school is well organised. They have a curriculum of lectures, seminars, and system of laboratory and hospital work. The laboratory work is well designed in a schedule to be followed after a lecture and is illustrative of the typical practical exercises for such a study. There is no dearth of equipment or material. The student is given all facilities for carrying out exercises. He provides his own microscope for laboratory work which is a major costly item of expenditure.

The student is not only a positive observer in lectures but actively participates in asking questions in the middle of a lecture. He is given complete freedom to ask any question during the lecture hour, even to the extent of interruption of it sometimes. He also takes part in discussions in student groups.

Students take part in the research activities as an elective during the course and usually spend their summer vacation working on a research project. They are given lots of encouragement by the staff to carry out this. The morale of students is high and discipline good.

Students are helped by part time employment after college hours, in the laboratories, library, and during vacations. They are paid on an hourly basis at the rate of $2·00 per hour. This helps the financially needy students a great deal, which we do not have in our country.

Student employment practices are as stated (*J.A.M.A.*, 1958 b):

1st year class	... ...	7·1 per cent
2nd year class	... ...	18·5 per cent
3rd year class	... ...	30 per cent
4th year class	... ...	40 per cent

Besides student employment, they are helped by financial loans on a low interest, scholarships, summer research fellowships. Nearly 60 per cent of all the students are covered financially in one of these schemes to strengthen their resources.

Students have a very good well furnished lounge for relaxation and a canteen attached for snacks. They have recreational facilities like games and sports.

ADMISSION REQUIREMENTS

The following points are taken into consideration before the student is admitted into a medical college.

1. Educational requirements—At least 3 years of (90 semester hours) liberal arts degree in an accredited college of sciences and arts (approved by the American Medical Association) with the following subjects: English, biology, physics, general chemistry (inorganic), organic chemistry. Completion of full 4 years bachelor's degree is preferred.

2. Scholastic aptitude—Academic accomplishment of the applicant—School grades.

3. Scientific aptitude—Sound indoctrination in sciences is essential to medicine.

4. Character—Personal qualities of honesty, integrity, industry and ability which should furnish solid foundation for a field such as medicine.

5. Motivation—For medical study.

6. M.C.A.T.—Medical College Admission Test. Administered by Educational Testing Service of Princeton, New Jersey, is given twice yearly throughout the country. This is considered of real value in selection.

7. Personal history essays—Submitted by the student with the application.

8. School recommendation records—From science and non-science teachers.

9. Health report with regard to soundness of physical and mental state to undergo this course.

10. Interview and physiological testing—by personal interview of the candidate by one of the members of the faculty admission committee (individually). The student will be called for interview only when all the above 9 parts are satisfactory from his application, filed in the prescribed form.

Medical Curriculum for Undergraduates

The American Medical curriculum consists of 4 academic years each extending from 1st week of September to 1st week of June. A general schematic representation is made as follows:

First Year

First Semester: Gross Anatomy and Microscopic Anatomy (Histology)
Second Semester: Biochemistry and Physiology, Science of Human Behaviour

Second Year

First Semester: Microbiology and Pathology
Second Semester: Pharmacology, Laboratory Diagnosis and Epidemiology, Introductory Clinical Lectures.

Third Year

Co-ordinated Clinical Lectures	Research?
Internal Medicine, Paediatrics	Freetime electives
Obstetrics and Gynaecology	
Surgery, Surgical Specialities	Research?

Fourth Year

Medicine (out-patient)—Block assignments
Paediatrics (out-patient)—Block assignments
Medicine (in-patient)—Clerkship
Obstetrics and Gynaecology—Possible Preceptorship
Surgery—Specialities with lectures and clinics in minor specialities

Psychiatry	
Public Health	
Legal Medicine	
Radiology	Research?

Table 2 contains the current medical curricula hours of American medical universities as compared with that of Osmania Medical College, Hyderabad, India, which is a five year course. It would be observed that the basic curriculum pattern given above conforms to the S.U.N.Y. Medical School at Syracuse. There are many alterations and changes in different universities constantly undergoing transformation of medical education. Much of the 'didactic' lectures and 'spoon-feeding' which were given in the past are now curtailed. Their place in recent times has been taken by integrated lectures, practical laboratory investigations, clinical clerkship, increased active participation by students in conferences, seminars and small group teaching activities. It is also noticeable that efforts at correlation have been made within individual departments which hitherto appeared to remain as isolated, pigeon-holed areas with little knowledge or concern. For example, during the 1st year the gross anatomy, histology, embryology and neurology have been correlated and integrated in a number of institutions, with the result that entities such as neuroanatomy, and neurophysiology are co-ordinated and taught simultaneously in some schools, giving the student a comprehensive understanding of both structure and function of the nervous system. Interdepartmental teaching programmes in certain aspects of biochemistry, physiology, histochemistry, pharmacology, microbiology and pathology are fascinatingly arranged.

During the *first year* besides the subjects of anatomy or physiology the student is introduced to the human behavioral problems of psychiatry and preventive medicine to give the concept of human being as a whole in his total setting early in the programme and to point out the socio-economic and other environmental causes which are also responsible besides organic disease.

The *second year* in most medical schools includes study of microbiology, pharmacology, pathology and beginning of direct patient contact by the introduction of history taking and physical diagnosis. Again there is interdepartmental correlation between basic sciences and clinical departments for teaching of clinical laboratory diagnosis. What we call the non-clinical subjects in India are called in America as basic medical sciences. The artificial division between these two is gradually fading away (in America) in an attempt to utilise applied basic medical sciences by all well-versed clinicians in their daily activities.

During the clinical years of the *3rd and 4th years* most of the time is devoted to modern clinical clerkships and 'block' assignments. In the 3rd year they will have one or two lecture sessions daily for the entire class of a co-ordinated lecture series including medicine and surgery, or obstetrics and gynaecology. In these 'block' assignments and 'inpatient' services, the 3rd year student becomes the junior member of the medical team, taking histories, performing physical examinations and undertaking certain laboratory procedures which form part of official record. He is supervised directly by the intern or through resident, instructor or responsible staff personnel. By rotation one-third of the 3rd year is allocated to medicine, a second third to surgery and remainder divided between obstetrics, gynaecology and paediatrics. Other specialty areas are encountered in the course of consultation activities, conferences, ward rounds and discussion.

In the 4th year the assigned lecture hours are minimal. There are 'block' assignments primarily in outpatient clinics, in the rotation of students through medicine, medical specialties, surgery, surgical specialities, obstetrics-gynaecology, paediatrics and in some instances assignments to psychiatry, preventive medicine, or an elective period.

Elective period is peculiar to American medical education which will not be found in the Indian

TABLE 2

	Columbia (*Columbia Univ. Bull.*, 1957)	Washington (Washington Univ. Publ., 1957)	Harvard (Harvard Univ. Register, 1958)	Syracuse (SUNY Catalogue, 1957-59)	Osmania (Horning, 1957)
Anatomy	595	618	487	690	1370
Human Behaviour	—	—	—	116	—
Biochemistry	181	312	220	264	120
Physiology	226	306	220	296	169
Microbiology	192	264	169	295	85
Pharmacology	137	216	148	336	150
Pathology	498	504	331	330	190
Parasitology	—	—	—	—	75
Forensic Medicine	—	—	—	—	70
Medicine	1050	980	708	1282	748
Surgery	722	804	660	572	833
Paediatrics	348	327	216	502	30
Psychiatry	182	148	248	252	18
Neurology	88	53	30	—	—
Public Health and Social Medicine	139	84	165	123	106
Obstetrics and Gynaecology ...	336	387	309	538	620
Medical Specialties :	—	—	—	216	—
Infectious Diseases	—	—	—	—	30
Dermatology	62	18	37	—	65
Leprosy and Tuberculosis :	—	—	—	—	48
R.N.T.	40	30	40	—	87
Ophthalmology	42	30	32	—	174
Radiology	—	—	—	36	—
Anaesthesia	—	—	—	—	26
Orthopaedics	—	—	—	—	40
Oral Medicine	—	—	—	—	55
Elective	665	198	144	—	—
Total	5503	5274	4261	5957	5109

system of medical education. This may occur at the end of the 2nd year or at the end of the 3rd. During this period the student is offered a free choice of anything of his creative interest, either research in biologic sciences at the end of 2nd year, or preceptorship in general practice, or research pertaining to clinical or allied medical fields at the end of 3rd year. This helps him to develop a scientific mind as also to think in terms of a physician in the preceptorships and to encourage self education.

At the end of every semester the student has to take an examination conducted by the faculty head of that department. Upon satisfactory performance in the examination he will be promoted to the next higher year of medical study. At least a "C" is the minimum grade for a pass. Majority will have attained 'B' grade while 10 per cent would attain an A grade. Upon satisfactory completion of all the four years with passing grades at least, the student is awarded the M.D. degree (Doctor of Medicine). This is equivalent to the basic medical degree of Bachelor of Medicine and Surgery (M.B., B.S.) in India. Though in the past, a year of internment (internship) was insisted on for granting the degree, it is no longer done in America in approved medical schools. But the student is encouraged to take the National Board Examinations (Parts I, II, III) before he obtains his license in over 40 states as a registered medical practitioner. 90 per cent of the students get through and qualify for the M.D. at the end of four years as against the deplorable number of failures in our Indian Schools.

GRADUATE MEDICAL EXAMINATION IN AMERICA

The term graduate medical education in America is applied to that particular course of education or instruction which one receives after the basic medical qualification of M.D. The basic medical degree produces only an undifferentiated physician who can subsequently build up the edifice by the experiences of internship and residency and can become a general or specialised practitioner ; or by a term of fellowship or research in basic medical sciences can qualify him for an M.S. or Ph.D. in anatomy, biochemistry, physiology, microbiology or pharmacology.

Graduate in Basic Medical Sciences

The figures (1957-58) for candidates under the graduate programmes in basic medical sciences show (*J.A.M.A.*, 1958 a):

1. Number qualified for M.S. (Master's in Science)	1,118
2. Doctoral Ph.D.	1,416
3. Post-doctoral	219

It must be said that the graduate programme in basic medical sciences does not insist on a medical degree as a prerequisite for admission. Though a B.S. (Bachelor of Science) is essential, candidates after 2nd year of medical study may join here and transfer their credits or fresh B.S. qualified candidates are also admitted into these courses which may extend from three to four years. These studies are carried out under the direct supervision of the Graduate Faculty of the College of Medicine as per the regulations set by the Graduate Council.

Internship—We have not got the large scale Internship (Internment) or Residency programmes in India. Internment is similar to our Junior house physician or house surgeon and lasts for one year. This usually starts after the 4th year of medical study in U.S.A. The candidates have to apply to a central clearing agency called the National Intern Matching Program (N.I.M.P.) to which the hospitals seeking intern would also verify the positions. The plan gives complete freedom of choice for the students and hospitals. During internment service the candidate receives a stipend ranging from $155 a month to $197 depending on affiliated and non-affiliated hospitals. It is worth mentioning that a a high autopsy rate of a hospital (80 to 98 per cent) is considered to indicate the interest of the staff in medical education and scientific progress, besides the things like bed-strength. Hospitals having autopsies below 25 per cent are not approved for internship. Of the 6,946 hospitals in the U.S.A., only 867 have been approved by the Council on Medical Education and Hospitals for Internship education and training, i.e., nearly 12 per cent of the hospitals. 12,325 positions of internship were offered by all in 1958. There are three types of internships. Rotating, mixed and straight. In the rotating the candidates rotate in medical, surgical, paediatric and obstetric departments. Mixed internship offers training in three or four major clinical subjects. Straight offers only a single science.

Residentship—The residency programme is a part of the graduate medical programme. Large numbers of young physicians seek graduate medical experiences from 1 to 5 years beyond the internship in preparation for specialty board eligibility. There are no university or other degrees offered for these courses like our M.D, M.S., etc. which we call 'post-graduate degrees'. The Council on Medical Education and Hospitals of the American Medical Association has constituted specialty boards in various subjects, like the National Board on Surgery, Medicine, Pathology, etc. There are 19 such boards constituted and the primary purposes of the specialty board are (1) to lay down the standards for qualifications of training; (2) to examine the suitable candidates who voluntarily submit after the prescribed period of training; (3) to grant certificates for successful candidates, etc.; (4) to recognise places for such training. There are 28 categories of specialties and sub-specialties under the various American specialty boards (*J.A.M.A.*, 1958 a). To mention a few of the unfamiliar specialties here; allergy, aviation medicine, proctology, occupational medicine, pulmonary diseases, plastic surgery, urology, thoracic surgery, neurology, gastroenterology, cardiovascular diseases, public health, etc. The total number of positions offered under residency programme is 30,595 for 1958 (*J.A.M.A.*, 1958 a).

Table 3 (McKittnick, 1958)

Hospitals approved for training now	Only internship	Only residency	Both residency and internship
1400	141	537	722
Percentage of total	10	38	52

Post-Graduate Courses for Physicians

After the basic physician finishes his internship and residency this is the third phase of his training. This is called the post-graduate medical education in America. It would be confusing to understand this American term for a newcomer from India where 'postgraduate' is used in a different sense as explained already. The post-graduate courses are short and consist of planned activities for doctors of medicine intended to 'refresh' practising physicians in various aspects of their basic medical education, to provide information in new developments and recent advances in medicine, thereby stimulating further educational efforts of the participants.

No degree or diploma are awarded for these courses. Various medical schools, hospitals, medical societies present these courses all over different states. During 1955-56, there were 886 post-graduate medical courses held in the U.S.A. and attended by over 37,000 physicians. This shows the great popularity of these courses. (*J.A.M.A.*, 1958 c). Information regarding these courses can be obtained for the coming year from

the Council on Medical Education and Hospitals, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois, U.S.A.

It would be interesting to mention a few of the 44 subjects offered under these courses: Electrocardiography, electroencephalography, endocrinology, neurology, malignant disease, physical medicine and rehabilitation, radio isotopes, pulmonary disease, peripheral vascular disease, basic sciences, allergy, anaesthesiology, etc.

Some Financial Aspects of Medical Education in America

The financial resources of the institution in America are very sound and there are extra mural sources of income (Moore, 1959), besides the fees collected from the students. Also there is support from the government both to the public and private institutions. This financial support has greatly stimulated research and training.

The expenditures for a 4 year school average between 2·370 million to 2·443 million for 1957-58 (*J.A.M.A.*, 1958 b) for running the institution.

The preclinical faculty derives its income exclusively from university sources. The clinical faculty consists of the following groups:

1. Academic full time: Derives his entire income from his university salary. His fees to the patient are collected by the school.
2. Geographic full time: All income earned from patients.
3. Part time: Comes several days a week to the college and receives a stipend for teaching.
4. Volunteer part time: No money paid by the institution.

It should be observed that in America there is no free medical service at all except in Veterans Administration Hospitals where war-returned people only are admitted. All hospitals charge on bills to every inpatient. For those limited number who are declared to be too poor to pay, their bills are paid by the Welfare Departments of the local and/or state or districts in which they live. Some may also be paid by the Welfare branch of the Department of Health, Education and Welfare of the Federal Government of Washington. Thus from the academic full time faculty member, the institution gains a lot.

Cost of basic medical education to student is shown in Table 4. The rates will vary widely from private to public schools.

The addition of microscope to these items will on an average be about 200 dollars in a public school per year ($1·00 = Rs. 4·73). It will be about Rs. 9,460.

Table 4 (*J.A.M.A.*, 1958b)

	Privately owned schools	Public schools	
		Resident	Non-resident
Tution fee ...	$1002	$ 500	$ 836
Room and board ...	„ 806	„ 765	„ 765
Books and supplies	„ 150	„ 130	„ 130
Total ...	$1958	$1395	$1731

Foreign Medical Graduates in America

During 1957-58, 7,622 physicians from 90 foreign countries participated in the medical educational programmes as interns or residents or visitors. Hitherto almost everybody was taken in these programmes but now the Education Council for the U.S.A. Hospital Programme for Foreign Medical Graduates conducts an examination which must be taken by all such people before January 1, 1960. Unless one succeeds, he is not eligible for participation in the future.

Experimentation in Medical Education

From the history of evolution of the American Medical Education it would appear that the old schools were started on the European or British style on the basis of apprenticeship-preceptor system, the first medical school of the genuine university type in the U.S.A. was the John Hopkins Medical School started in 1893.

The American Medical Association through its Council on Medical Education, The Association of American Medical Colleges, The Carnegie Foundation for Advancement of Teaching, and finally Flexner' Report (1910) have since remarkably changed the original situation. The advances in scientific knowledge, society and environment in America with need for constant study and revaluation have brought about experimentation in medical education.

As a result of these experiments many changes in curricula are noticeable in different universities. Notable among these changes a few can be stated:

1. The Western Reserve University since 12 years has brought about a complete reorientation of the entire undergraduate medical curriculum, bringing about integration of the knowledge of the structure of the body and its functions with a research approach and using 'the multidiscipline laboratories' (Patterson, 1956; Spillman, 1958).
2. The Duke University has another, a programme designed to produce physicians who are skilled medical research scientists to "evidence

research bent on an enquiring, critical and original mind".

3. Wisconsin preceptorship programme—to make a better physician—in operation for 30 years.

4. Washington University focusses attention on basic sciences during clinical years.

5. Buffalo School of Medicine introduced the need for familiarity with educational principles and techniques among teachers.

6. Comprehensive care and teaching programme in Cornell (Merton *et al*, 1956) incorporates the studies in the sociology of medical education.

7. The Yale University insists on a dissertation to be submitted by the student at the time of M.D. examination. This should be based on the piece of research which he carried out in a 'block research of 12 weeks' allotted for the purpose.

8. A seven year course programme of the Johns Hopkins University School of Medicine (1957) combining A.B. and M.D. degrees.

Discussion

The dilemma of the vast amount of knowledge growing in the medical field is answered by a life long educational experience in the United States by four general periods: (1) Premedical period to prepare a sound general knowledge for 12 years; (2) Four years of undergraduate medical study; (3) Followed by graduate education of internship and residency; (4) Postgraduate education on entering the profession for keeping abreast with new developments.

There is a greater integration of university and medical schools in America for the advancement of higher knowledge and research with a high academic atmosphere. In this respect we are lacking very much in India and there is much to endorse the opinion of Pandit (1959). "It is not beyond our resourcefulness to bring about a closer integration of medical colleges and their associated teaching hospitals with their respective universities." And it is also pertinent to point out the remarks of Allen Gregg, "The nature of relationships between medical colleges and universities are depressingly formal, tenuous and unproductive".

There is emphasis on basic sciences and high fundamental research in biochemistry, biology, genetics. The scientific method and research approach (Ham, 1958) have not only found place in clinical and non-clinical fields but also found application to programmes in medical education, health services and patient care. This current trend of research approach in medical education and success are made possible by the backing of economic and industrial wealth in America. If freedom and democracy have pervaded every walk of life in America, the medical education is no exception. Freedom has been exercised, with the good will of the A.M.A. through its Council of Medical Education, to experiment with the various programmes of curricula in undergraduate education and the democracy of the faculty has enabled it to implement and evaluate it with the largest interdepartmental cooperation of men and integration of ideas.

Freedom also found a choice in electives and educational opportunities of the student who is helped to develop a logical and critical approach to unfold his talent to 'self-education'.

My study of the American medical education will be incomplete without a discussion on its suitability and applicability to India.

It is noticeable in the American curriculum that sufficient emphasis is not laid on tropical diseases, epidemic diseases like cholera, smallpox, etc., and nutritional diseases, which are necessary for an Indian student under rural conditions. These diseases are all controlled and no more exist in America. The economic and material resources of India at present do not permit of costly equipment in diagnosis and research. The recommendations and special objectives of medical education in India as laid down by the Bangalore Conference (1951) on Medical Education in India are worth remembering before attempting to change and reorientate the existing medical education in India. It must be admitted that the old 'British System' of medical education still existed in India in a static condition, despite dynamic changes brought out in Britain itself. I have only to repeat what I already stated in my reports to the I. C. A. (Ramanarao, 1959), that "One should not be blown away in the whirlwind of the enthusiasm of the conference and impression of American medical education, one should not blind his eyes to the needs of one's own country, people, its environment, resources and conditions, and objectives based on these, having no doubt with reasonable perspective for ideals, one should pursue the best of these objectives under such circumstances without fear of false prestige or compulsion".

In conclusion it must be said that the philosophy of changes, trend and progress in American medical education are stimulating enough to broaden the outlook of a medical educator.

Summary

1. A broad account of the American medical institutions, and entrance requirements are presented with factual data.

2. The medical student in America, his curri-

culum, his financial expenditure and his research as well as other participations in the courses are related.

3. The various phases of undergraduate, graduate and postgraduate medical educations are explained.

4. Experiments in medical education and research trend have been discussed.

5. The impact and value of this study as regards its application to the Indian subcontinent have been outlined in the discussion.

ACKNOWLEDGMENTS

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CASE NOTES

A RARE CONGENITAL ABNORMALITY OF THE TESTIS

S. B. RATH, M.B.B.S.

Cuttack

A Hindu, male, aged 22, came with the following complaints: A swelling in the scrotum which could be reduced into the abdomen when pressure was applied over it. There remained nothing in the scrotal sac after the reduction. Both sides of the sac were then found empty, and no testis could be detected in either sac.

The patient has got this trouble since his birth. He is unmarried and has normal sexual urge and seminal discharge. The patient has one sister who is married and has a female child. No one in his family has any abnormal sexual behaviour.

The patient is of average build, and the secondary male sexual characters, i.e., moustache, beard, pubic and axillary hairs, are well developed.

On inspection, the scrotum with the hernial contents was found to be the size of a big cocoanut, but when the hernia was reduced, it hanged like an empty bag. The penis was of average size.

On palpation there was a feeling of softness. On pressure the hernia was reduced with gurgling sound through the left inguinal canal. No testis was felt inside the scrotum.

Operation notes—The patient was operated on for left inguinal hernia on 4-3-60 in the City Hospital, Cuttack. During operation, it was revealed that the hernial sac contained a fully grown uterus ($3'' \times 2\frac{1}{2}'' \times 1\frac{1}{2}''$) together with fully developed fallopian tubes having fimbriated ends, two round ligaments, and broad ligaments—all covered with peritoneum and attached to the inner aspect of the sac. At the position of ovaries, there were found two lumps each of which looked like a testis. Although half the size of a normal testis, it resem-

Fig. 1 (Trachoma stage I) – Showing uniformly distributed pre-follicles on upper tarsal conjunctiva and small follicles on the limbus.

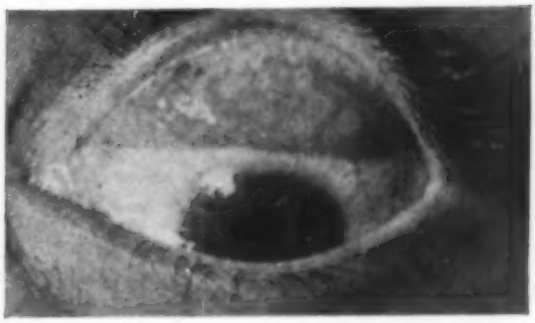

Fig. 2 (Trachoma stage II)—Showing upper tarsal conjunctiva studded with follicles and papillae. Marked pannus in the upper part of the cornea.

Fig. 3— Showing Herbert's pits— pathognomonic of trachoma.

Fig. 4—Showing non-trachomatous follicles in lower fornix. The upper tarsal conjunctiva is healthy.

Fig. 5—Showing non-trachomatous follicles in upper fornix (of case shown in Fig. 4).

Fig 6 – Showing non-trachomatous follicles at the angles of upper tarsal conjunctiva. Middle third of the tarsal plate is free from follicles.

Fig. 1—Showing normal secondary sex characters.

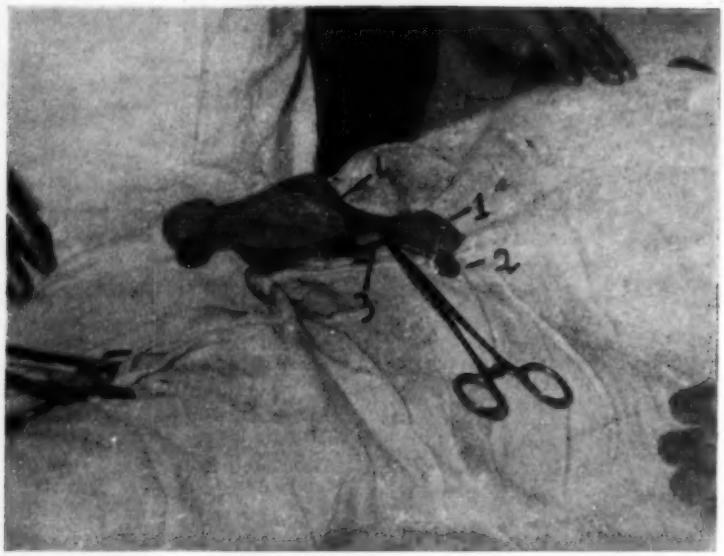

Fig. 2—The field of operation showing (1) testis in the position of ovary, (2) fimbriated end of fallopian tube, (3) fallopian tube and (4) body of the uterus.

RATH—*A Rare Congenital Abnormality of the Testis (p. 70)*

Fig. 1—Skiagram in Trendelenburg position showing no herniation.

Fig. 2—Skiagram in toe-touch position showing oesophageal reflux and hiatus hernia.

DVIVEDI—*Toe-touch Position in the Diagnosis of Hiatus Hernia (p. 73)*

ENGRAVED & PRINTED BY REPRODUCTION SYNDICATE, CALCUTTA 6

bled the testis in shape, contour, consistency and colour (Fig. 1, *vide* Plate).

As the operation was conducted under local anaesthesia, drastic manipulations were not possible. The question of removal of the 'lump' was not considered as it might affect the patient's manliness and potency. So the redundant portion of the sac was cut away and the cut-end of the sac was anchored near the internal ring. The canal was repaired and the wound closed as in a normal case of inguinal hernia. The entire post-operative period was uneventful and the stitches were removed on the seventh day with good union. After full recovery the patient's seminal fluid (which he himsel collected) was examined and found to contain no spormatozoon.

The patient has been referred to the S.C.B. Medical College Hospital for further investigation.

ACKNOWLEDGMENT

I am grateful to Dr. D. R. N. Sahu, Director of Health Services, Orissa, for kind permission to report this case. My thanks are also due to Dr. H. C. Roy, Dr. B. B. Pattanaik and Dr. S. Pattanaik for helping me in the management of the case and in the preparation of the notes.

TOE-TOUCH POSITION IN THE DIAGNOSIS OF HIATUS HERNIA*

M. S. DVIVEDI, M.B., B.S., D.M.R.E.

Lecturer in Radiology
Gandhi Medical College, Bhopal

INTRODUCTION

Radiological demonstration of hiatus hernia in patients referred by clinicians with a very suggestive history of the lesion has always been a problem. Majority of these cases are being correctly diagnosed since Shanks (1948) stressed the importance of routine screening of these patients in Trendelenburg position; still quite a few of them are being missed. To minimise the number of such missed cases, many workers, notably, Lawyer and McCreath (1951), have been using the true lateral and erect toe-touch positions, in addition to examination in Trendelenburg position. Conway Hughes (1956) could not find increased incidence of oesophageal reflux by toe-touch position, but Carmichael (1959), in his barium meal series of 2,040 cases, could demonstrate hiatus hernia in 92 cases by employing toe-touch position and only 73 cases by Trendelenburg position, thereby stressing the importance of the former in demonstrating hiatus hernia.

* Case presented at the monthly meeting of Bhopal branch of the Indian Medical Association.

TECHNIQUE

After the patient has taken the barium meal and been screened in Trendelenburg position, he is made to stand in lateral position so that his left side is nearest to the screen. The patient is then asked to bend forward and try to touch the toes. During this manoeuvre the intra-abdominal pressure is the maximum. The patient is screened during this period for any evidence of hiatus hernia.

CASE REPORT

P. C., Hindu male, aged 45, was admitted to the Hamidia Hospital, Bhopal, on 1-2-60 with the complaints of pain in the abdomen, repeated attacks of haematemesis, severe retching, belching and retrosternal burning. He was referred to the author for barium meal examination which was done on 9-2-60.

A big ulcer niche was found along the lesser curvature near the cardia. Since his history was suggestive of hiatus hernia he was screened in Trendelenburg position which did not reveal any oesophageal reflux (Fig. 1, *vide* Plate). The examination in toe-touch position revealed marked oesophageal reflux and a hiatus hernia (Fig. 2, *vide* Plate).

DISCUSSION

The contention that sliding hiatus hernia can always be demonstrated by screening the patient in Trendelenburg position is fallible and no more tenable. The practical value of this simple manoeuvre is well demonstrated by the case reported above, in which hiatus hernia was not demonstrated in Trendelenburg position, while it could easily be demonstrated by toe-touch position, and, as such, it should be employed routinely in all cases of suspected hiatus hernia.

SUMMARY

The importance and practical value of the technique of toe-touch position in the diagnosis of hiatus hernia has been stressed. A case in whom the hernia was missed in Trendelenburg position and visualised in toe-touch position has been reported.

ACKNOWLEDGMENT

I wish to express my thanks to Professor S. M. Misra, under whose care the patient was admitted. My thanks are also due to Dr. R. P. Singh, Principal, Gandhi Medical College, Bhopal, for allowing me to report this case.

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HUMAN EXPERIMENTATION : A WORLD PROBLEM

Modern medicine has developed by a process of evolution. It began with observation of facts, collection and comparison of data, and framing of hypotheses by inductive reasoning. Hippocrates, the master clinician and father of modern medicine, introduced what we call observational research. It was Galen who later introduced experimental physiology which culminated in the epoch-making discovery of the circulation of blood by William Harvey by animal experimentation.

While animal experimentation has laid the foundation of anatomy and physiology, human experimentation has confirmed and extended this knowledge. With the purpose of alleviating human suffering, the surgeon experiments on a series of living human subjects and finds out his figures of success or failure to justify such experiments. Other workers introduce modifications of the original technique for a lower percentage of operational mortality and an improvement in the result. Similarly, pharmacologists and chemists introduce new drugs whose efficacy is tried clinically on human subjects. Today human experimentation has become necessary in order to provide proof of 'efficacy of a method or drug' because 'what goes for a mouse does not always do far a man'.

These experiments on human beings raise a moral problem. Controlled clinical trials are thus undertaken for the benefit of future generations of patients, and not expressly for the benefit of the persons undergoing such trials. For example, the BCG vaccine was introduced in 1922, but it took 34 years of experimentation by the Medical Research Council to prove its usefulness in preventing tuberculosis. Similar was the case with trials with penicillin, streptomycin and other life-saving drugs. Clinical science has developed from this campaign of trial and error. It has given mankind a control over disease which was undreamt of a century ago. Controlled clinical trial is the only way to demonstrate the benefits and risks of a drug or an operation, which on *prima facie* grounds holds out hopes of being beneficial.

At the Nuremberg trials (of the War Criminals) the rules governing such human experiments were clearly formulated and were known as the Nuremberg Code. As there is no element of force and/or deceit in the investigations cited above, it satisfied the principles of the Nuremberg Code. But the ethical danger of these collective investigations is that 'for the good of society' the individual taking part in the trial is lost sight of. There are volunteers and volunteers for such experiments. Inmates of penitentiaries have sometimes 'agreed' to subject themselves to experiments, and many experiments have also been done on them with the aim not of doing them good but of seeking information which would surely 'yield fruitful results for the good of the society'. This is an anomalous position, for the doctor's ethic has always been based on his duty to care for the individual—to keep him well when he is healthy, and to treat him according to the art when he is ill. The fallacy of the Nuremberg Code lies in the fact that the investigator in search for the truth can always claim that what he is doing is for the good of the society instead of the individual. Referring to the question of consent, Sir Harold Himsworth of the British Medical Research Council observed that owing to the special relationship of trust which exists between a patient and his doctor, most patients will consent to any proposal that is made. Further the considerations involved are nearly always so technical as to prevent their being adequately understood by one who is not himself an expert, and nearly always the doctor's judgment will be accepted by the patient as decisive. A special responsibility thus lay upon scientific societies, and editors of scientific journals, in view of the high degree of specialisation of medical knowledge.

The zeal for basic research in medicine has led to an expansion of human experimentation within our ethical and moral concepts, although it is still considered as extra-legal in character. The following generalisations have been accepted in the choice of subjects :

1. It is not often possible directly to transfer observations made on normal individual to the sick.

2. Individuals who may die suddenly or who seem to be in imminent danger of death should not, under ordinary circumstances, be chosen as subjects for experimentation, however harmless the planned procedures may be.

3. It is usually unwise to study a therapeutic procedure in an individual who has also a disease unrelated to the expected therapeutic effects ; and

4. Lay subjects, sick or well, are not likely to understand the full implications of complicated procedures even after careful explanation. The potential risk which may be involved in the conduct of the experiment should be fully explained to the volunteer subject.

Laboratory personnel and medical students are not generally good choice of subject, because being 'captive', they are nonetheless amenable to certain kinds of subtle coercion or pressure. As civil prisoners may be liable to flagrant or subtle, and direct or indirect coercion, they also should not be selected. Rewards or full pardon should not be held out to prisoners or other categories. The Defence department of the U.S.A never permit the prisoners of war for human experimentation.

From the standpoint of the medical profession the investigator should be a well trained and adequately qualified scientist bent on solving a scientific problem. The importance of the project must also be commensurate with the risk involved. It is unethical and immoral to carry out potentially dangerous experiments without the subject's knowledge and permission. The individual should not be subordinated to the community as the latter exists for the man. The US Public Health Service has adopted the Nuremberg Code's 10 points. The Judicial Council of the American Medical Association has suggested the following three principal requirements for human exprimentation :

1. The person on whom the experiment is to be performed must give voluntary consent ;

2. The danger of each experiment must be previously investigated by animal experimentation ; and

3. The experiment must be performed under proper medical protection and management.

The 'Wigger's Statement' published in the Alumni Bulletin of Western Reserve University, 1950, restated the 10 points of the Nuremberg Code, with the following extensions or additions :

"1. Human experiments should not be projected until their necessity has been unquestionably established and a feasible humane procedure for their conduct has been formulated ;

2. The scientific, ethical and legal consideration pertaining to contemplated studies on human subjects should, whenever possible, be reviewed and approved by a group of colleagues who will not participate in the investigation ; and

3. The investigation should be so conducted that legal liability under malpractice or personal injury laws never comes into question."

The spiritual aspect of human experimentation is summarised in the Commandment : "Thou shall not kill." No 'superior motive' can justify the arbitrary reduction in the integrity of the power to live. No one has the right to mutilate himself or to allow excessive risks in undergoing dangerous experimentation. Pope Pius XII wrote "We must note than man in this personal being must not be subordinate to the community, on the contrary, the community exists for the man". The doctor should work in the "interest of the patient" (Hippocratic Oath), "the health of my patient should be my first consideration" (Declaration of Geneva, 1948). Therefore, the moral and spiritual competence of the doctor remains the most important factor.

In India, inmates of prisons, mental institutions, etc., are not used as subjects for human experimentation. Patients also are not used for investigations which have no relation to the condition for which they have been admitted to the hospital.

The problem of human experimentation is a very complicated one. To forbid all experimentation in the human would be easy, but not a solution. Because, without experimentation modern medicine could not progress and would fail to benefit humanity by fighting disease. A modern doctor should follow Hippocrates in his compassionate care for the sick. So long as the research worker is imbued with the Hippocratic ideal, this and his conscience should be a sufficient guide. The guiding principles of human experimentation may be summarised as follows : It should be accepted that the furtherance of medical research in itself is a highly ethical aim, and that a certain element of experimentation is inherent in every medical activity. As long as such experimentation does not involve more risk or causes more discomfort than any accepted routine medical treatment, it is justified. Investigations carrying more discomfort than 'normal' are only justified under certain precautions. There must also be a reasonable chance that the knowledge to be gained by the research will help to conquer the disease from which the patient himself is suffering. The volunteers (healthy controls) should be explained about the risks of experimentation and their consent has to be obtained. The ideological structure of the community is also an important factor. Special consideration must be given to the use of inmates of prisons or institutions for the mentally retarded or disturbed individuals for controlled experimentation. The atrocities committed in German concentration camps by 'doctors of infamy' during the second world war are examples of the most extreme degree in human experimentation committed on helpless human beings.

International consultation is necessary for developing a general code which would serve the best interest of science and mankind in the realm of human experimentation. As no country has any law prohibiting or specifically controlling human experimentation, it is for the World Medical Association, representing all national medical associations, to formulate the basis of an ethical code on experimentation on human beings.

GENERAL PRACTICE DIGEST

EMERGENCY BLOOD GROUPING

On the surface of the red blood cells are a number of different blood group substances or *agglutinogens;* and in the plasma or serum are one or more *agglutinins* or *antibodies.* A serum containing an anti-A agglutinin, when mixed with cells bearing the agglutinogen-A, will react specifically with those cells in such a way that they are attracted together to form clumps or agglutinates. Cells which do not carry the agglutinogen-A are unaffected and remain evenly distributed. Similarly, sera containing other agglutinins such as anti-B or anti-D will react specifically with cells bearing their corresponding agglutinogens. Although nine separate blood group systems are recognised, only the ABO and Rh (D) groups are of clinical importance in the majority of cases.

Reagents Required

Grouping Sera—A stock of anti-A, anti-B, and anti-Rh (D) sera are required.

Any 'instruction for use' issued by the manufacturers with the grouping serum should be carefully followed. Fluid sera should be stored in freezing cabinet; and dried sera may be stored at room temperature. The expiry date should be verified.

Blood Samples—(1) *The patient*—The patient's red cells will be required for grouping tests, and his serum for the matching test.

About 2 to 10 c.c. of venous blood is taken into a sterile container and allowed to clot. When the clot has retracted the serum is removed from the matching test; and cells can then be obtained by poking a wooden applicator stick into the clot and transferring about five drops to a test tube containing 1 c.c. of normal saline.

(2) *The donor*—A donor of the same ABO and Rh group as the patient should be chosen and therefore his cells only will be needed.

Five drops of blood should be taken into 1 c.c. of normal saline by pricking the donor's ear lobe or finger.

Apparatus—The grouping and compatibility tests are best done on glass microscope slides, which should be clearly labelled with the name of the person being grouped and with the antiserum being used. Contamination will spoil the tests. After use with one serum the Pasteur pipette should be rinsed three times in tap water and in normal saline before the next serum is taken up, and this rinsing is repeated each time a move is to be made to a different serum or cell suspension.

ABO Grouping

Label one microscope slide for each person who is to be grouped. One drop of anti-A serum is placed towards the left end of each slide and one drop of anti-B nearer the right end. One drop of patient's or donor's cell suspension is added to each drop of serum on one slide and is mixed by gentle rocking and rotation of the slide.

When a potent grouping serum is used agglutinates about the size of grains of red pepper may begin to appear within half-a-minute, but when no clumping is visible, even when viewed against a white background, the gentle rocking of the slide must be continued for not less than five minutes before one can say with confidence that no reaction is occurring. A microscopic check of the naked-eye appearance is advisable to confirm a negative result.

1. Cells agglutinated by anti-A but not by anti-B belong to group-A.
2. Cells not agglutinated by anti-A but agglutinated by anti-B belong to group-B.
3. Cells agglutinated by anti-A and anti-B belong to group-AB.
4. Cells not agglutinated by anti-A or anti-B belong to group-O.

Rh Grouping

One drop of anti-D serum (which is known to be suitable for the slide test) is placed on a glass slide and to it is added an equal drop of a thickish cell suspension or a drop of whole blood. After thorough mixing with the clean end of an applicator stick the slide is held over an opal glass electric light bulb and is gently rocked and rotated. The light provides the necessary warmth for the test and makes the reading easier.

A good serum will agglutinate D Rh-positive cells within a minute or two, but apparently negative results should be scrutinised for five minutes after which time the effects of evaporation may begin to confuse the appearance.

ABO and Rh Grouping by 'Eldon Cards'

These cards are prepared by the Nordisk Insulinlaboratorium in Denmark.

On the surface of each card a drop of anti-A, anti-B, and anti-D grouping serum has been dried. A drop of water is used to reconstitute each serum and a carefully measured drop of whole blood obtained by ear-prick is well mixed with each serum. The card is tilted back and forth for three minutes and examined for the presence of agglutinates.

(Any departure from Eldon's prescribed technique will increase the risk of false reactions and during long and improper storage of the cards the sera may become inactive.)

The Compatibility or Direct Matching Test

A test of compatibility between the patient's serum and the donor's cells must be done every time a bottle of blood is to be transfused.

Two drops of the *patient's serum* are placed with two drops of the *donor's cell suspension* in a small test tube and are thoroughly mixed. If a centrifuge is available the tube should be spun rapidly for three minutes, after which the cells are transferred by Pasteur pipette to a glass slide and a microscopic search made for agglutinates which would indicate incompatibility.

If no centrifuge is available the contents of the test tube will require longer for their interaction at room temperature—at least ten minutes and preferably thirty minutes should be allowed before the results are read.

If no tubes are available the drops can be mixed on a glass slide which should be placed in a Petri dish

containing moist cotton-wool to prevent evaporation during the thirty minutes before the microscopic reading.

Even if the clumps consist of only 4 or 5 cells the blood must be regarded as incompatible and a further donor matched.

Even if group-O blood has to be transfused to patients of group A, B, or AB, a "minor matching test" in which the patient's cells are mixed with *donor's serum* should be included in the tests of compatibility.

—(Condensed from an article by Jean Grant, M.B., F.R.C.P. (ED.), Oxford—*Pract.*, **183** : 652, 1959.

CURRENT MEDICAL LITERATURE

Evaluation of Chlorothiazide in Hypertensive Patients

BARTELS, C. C., EVANS, J. A. AND TOWNLEY, R. C. (*J.A.M.A.*, **170** : 1706, 1959) from the Department of Internal Medicine, Lahey Clinic, Bostorf, from a study of 65 hypertensive patients treated with chlorothiazide observe :

A definite hypotensive effect was observed in 80 per cent of the patients. This effect was more pronounced in patients with severe hypertension and in those receiving gangion blocking agents; it was most pronounced in patients who had previously undergone splanchnicectomy.

Of the 23 patients who had formerly required ganglion blocking agents, 12 were able to discontinue that therapy and an additional 6 were able to reduce the dosage to one-half or less when chlorothiazide was administered.

Genital Tuberculosis

BOSE, S. (*J. Obst. & Gynaec. India*, **10** : 12, 1959) from the Department of Obstetric & Gynaecology, Eden Hospital, Medical College, Calcutta, reported a series of 80 women with genital tuberculosis. This involvement was tubal in 43, endometrial in 26, and cervical in 11. Cervical lesions were commonest in the age group 21 to 30 years. Of those with tubal involvement 15 had tuberculous peritonitis. Only six had pulmonary lesions associated with endometrial tuberculosis. There was no instance of urinary or skeletal involvement in the series. The lesions were mostly miliary with isolated tubercles and peritoneal nodules. Sixteen had matted tubo-ovarian masses with dense adhesions. Pyosalpinx containing caseous material and few adhesions was found in only one patient. The endometrium presented a normal appearance on gross examination in most patients. Ulcerative and proliferative cervical lesions were equally distributed and four were erroneously diagnosed carcinoma. In nine sterility was the primary complaint and others were found to have been infertile for several years. Menorrhagia or metrorrhagia was present in 34 and amenorrhea in 13. Ten had abdominal pain and 13 had distention associated with involvement of the pelvic peritoneum. Only four had low-grade fever and debility.

The usual treatment initially consisted of 1 g. of streptomycin and 10 g. of PAS daily for three months; 150 to 200 mg. of isoniazid was given daily if no appreciable improvement occurred or toxic manifestations appeared. An operation was performed only when the diagnosis was in doubt (8) or the patient did not respond to medical treatment (25). Twenty had panhysterectomy; in 9 there were extensive miliary tubercles on the peritoneum, omentum, and intestines and the abdomen was closed after peritoneal instillation of streptomycin; 2 had salpingectomy; and 2 had an amputation of the cervix. Intensive antituberculous treatment was continued during the postoperative period. There were no deaths.

Streptokinase and Streptodornase in Postoperative Vaginal Discharge

REMINE, W. H. AND MURPHY, T. R. (*Proc. Staff Meet. Mayo Clinic*, **34** : 459, 1959) of the Section of Surgery, Mayo Foundation, write :

Streptokinase-streptodornase was used as the only local instillation in the case of 100 women who had had vaginal hysterectomy and repair of a cystocele. The indication for its use was the post-operative presence of a profuse, foul-smelling vaginal discharge noticed by the patient herself or by attendants. The medicament in the form of a thin jelly, was administered by a syringe through a catheter placed in the vagina. The proper consistency was obtained by mixing one vial of varidase in 20 ml. of water and adjusting the viscosity to the syringe by adding standard hospital lubricant jelly. The patient was kept flat in bed for half an hour after instillation. Treatment usually was begun on the fifth or sixth postoperative day and was continued for 2 or 3 days thereafter.

The results were most gratifying. In 87 of the women so treated, the foul-smelling discharge was completely eliminated. In an additional eight patients the discharge was considerably decreased, and in only five cases was there no appreciable relief. There was no instance of bleeding or other complication. Most patients obtained their good results with only two instillations, and none required more than three treatments.

Treatment of Tuberculous Meningitis

Tuberculous meningitis has a high mortality and incidence of relapse and of irreparable sequelae unless it is vigorously treated. Whether intrathecal therapy is essential is undecided, for no controlled trial has been reported. The need for such a trial is clear. Smith and her colleagues (*Tubercle*, **37** : 301, 1956) have stressed that the amnesia of the active phase of the disease is profound, but this does not preclude psychological trauma resulting from repeated lumbar punctures, which moreover entail a risk of secondary infection and damage to the cord besides much time and labour. Lorber (*Lancet*, **1** : 1149, 1954) reported that administration of isoniazid enabled the course of intrathecal streptomycin to be shortened, but he noted that after withdrawal of streptomycin the cerebrospinal-fluid (c.s.f.) picture might deteriorate during isoniazid therapy. Smith *et al* (*loc. cit.*) could not determine the value of isoniazid because its introduction coincided with other changes in therapeutic regimen. Torres-Gost (*Lancet*, **2** : 993, 1953) reported impressive results with intramuscular streptomycin and

oral and intrathecal isoniazid, but whether the intrathecal therapy had any value cannot be determined. Estimations of isoniazid in the C.S.F. after oral administration suggest that it diffuses freely. The Scottish Joint Committee Trial (Scottish Joint Committee, *Lancet*, **2** : 786, 1957) was of three different schedules, but each included intrathecal streptomycin. Two new reports add a little to our knowledge. Wright (*Quart. J. Med.*, **28** : 449, 1959) compared the results of treatment with intramuscular and intrathecal streptomycin with those obtained from intramuscular streptomycin, together, in some cases, with isoniazid and p-aminosalicylic acid (PAS). With the latter regimen the results were good, the survival-rate being 83·3 per cent; but would they have been better if streptomycin had been given intrathecally as well? Fyfe (*Arch. Dis. Child.*, **34** : 334, 1959) compared the results obtained by, on the one hand, intrathecal injections of streptomycin and, on the other hand, no intrathecal therapy. The intrathecal course was short by the standards of many centres; and other drugs, such as steroids and PAS, were given to some patients in both groups, which were small. Fyfe is probably wise not to draw firm conclusions.

Possibly compromise schedules have delayed definition of the best. Some may feel that the onus of proof now lies on those who advocate a course of intrathecal streptomycin therapy; but, since intrathecal therapy in the dose range used today seems unlikely to exert an unfavourable influence on recovery, a controlled trial, based on sequential analysis, could best be done by a centre advocating its discontinuance. In the treatment of other types of bacterial meningitis—particularly pneumococcal meningitis—where controversy persists about the use of intrathecal penicillin, similar trials are also overdue.—*Lancet*, **1** : 274, 1960.

Control of Lipaemia in Children with Diabetes Mellitus

Salt, H. B., Wolff, O. H., Nestadt, A. and Lloyd, J. K. (*Lancet*, **1** : 71, 1960) from the University Department of Paediatrics and Child Health and the Children's Hospital, Birmingham, observe that in four previously untreated diabetic children, insulin therapy lowered the initially high values for serum triglyceride, B-lipoprotein lipid, esterified fatty acid, and phospholipid to normal within 24 to 48 hours. In one of the patients, in whom the serum-cholesterol level was initially high, insulin brought it down to normal.

In four patients under established diabetic control, observations of the diurnal variations of the various serum lipids and blood-sugar levels revealed a relative constancy of the lipid levels in the face of considerable variation in blood-sugar.

In thirteen diabetic patients under insulin control the effects of feeding unsaturated fats on the serum lipids were observed. Eight were given an emulsion of sunflower-seed oil; this led to a lowering of serum B-lipoprotein lipid, esterified fatty acid, phospholipid, esterified cholesterol, and triglyceride concentrations to levels below the control levels. Five were given a diet in which most of the usual (animal) fat had been replaced by corn oil. The isocaloric change from the control to the corn-oil diet led to a fall in esterified cholesterol and B-lipoprotein lipid to about 60 per cent of the initial control levels, esterified fatty acid to about 75 per cent, and unesterified cholesterol and phospholipid to about 80 per cent.

In two patients on the corn-oil diet the effects of lessening the insulin dosage were observed. The cholesterol and phospholipid remained at low levels, but the diet did not prevent a rise in triglyceride, esterified fatty acid, and the ω (chylomicron) lipid fractions.

The hyperlipaemia of diabetes has similarities to that preceding atheroma in older non-diabetic subjects. It may play an important part in the causation of the vascular complications.

Hyperlipaemia could not doubt be prevented by perfect control of the diabetic process with insulin; but such control, however, desirable, is rarely if ever maintained for long periods. As an additional controlling measure, a diet rich in unsaturated fat deserves long-term trial.

Hemodynamic Concept of Atherosclerosis

Texon, M. (*Bull. N. Y. Acad. Med.*, **36** : 263, 1960) from New York University Post-Graduate Medical School gives in the following lines the summary of his observations on haemodynamic concept of atherosclerosis :

Hemodynamics has been presented as the primary factor in the development of atherosclerosis. A physical basis for occlusive arterial disease is offered. The laws of fluid mechanics determine the predilection for atherosclerotic lesions to occur at areas in the circulation characterised by converging boundaries, abrupt curvature, bifurcation, branching and external attachment. These are sites of relative decrease in lateral pressure in accordance with Bernoulli's Theorem.

The haemodynamic mechanism is described for intimal ulceration, intramural haemorrhage and dissecting haematoma occurring as complications in the pathogenesis of atherosclerosis. The haemodynamic concept applies to the circulation in the aorta and coronary arteries as well as to the arteries of the viscera and extremities. It also applies to the pulmonary artery and the venous circulation generally.

The haemodynamic concept considers the velocity of blood flow and the nature and biological response of the tissues to be closely associated with the variations in degree of atherosclerosis among different individuals. The principal cause of variation in the severity of atherosclerosis appears to be due primarily to differences in hydraulic specifications. Additional factors are described. These may merely modify the primary hemodynamic mechanism. Atherosclerosis appears to be a sequel primarily of fluid dynamics applied to the natural conditions in the circulatory system.

Unexplained Heart Failure in the Aged

Rose, G. A. and Wilson, R. R. (*Brit. Heart J.*, **21** : 511, 1959, Ref. *J.A.M.A.*, **172** : 735, 1960) write :

When older persons die of heart failure, the clinician generally assumes that myocardial ischaemia is a factor, but sometimes the pathologist can neither confirm this diagnosis nor suggest any other adequate explanation. The authors collected data on such cases in the hope

of clarifying their aetiology. Their study was based retrospectively on 50 consecutive autopsies on patients who died, at an age of 70 years or more, of heart failure for which the clinician could find no adequate explanation. A proper assessment of the importance of various common conditions—hypertension, coronary disease, and brown atrophy, for example—required some standard by which to estimate their general incidence in the elderly. Each heart failure subject was, therefore, matched by the next person of the same sex and age (± 3 years) who came to autopsy without evidence of heart failure, and also without any of the clinical conditions specified earlier as possible causes of heart failure.

It was found that chronic failure of a structurally normal heart was common, and the authors do not consider it unreasonable to postulate that they may be dealing with a myocardium that has been weakened through some process connected with age itself. The pathologist, by examination of the heart alone, cannot tell whether a patient has died of heart failure. Campbell has taught for years that he cannot distinguish between 2 large hearts, both from patients with hypertension, one of whom has died after a road accident and the other after congestive failure. Inasmuch as one is already familiar in the aged with the paradox of failure of the mind and weakening of the limbs which are not reflected after death in any visible change in the brain or muscles, a similar obscure weakening may also affect the myocardium. Nevertheless, such a hypothesis must not be too readily adopted, lest it hide some cause of myocardial failure more specific than mere senility.

On the basis of the autopsy findings, the authors feel that their patients can probably be divided into 3 aetiological groups: (1) those with former hypertension; (2) those with occult myocardial ischaemia; and (3) those with normal blood pressures and with hearts of normal appearance. This last entity can perhaps be referred to as 'senile heart failure,' provided one recognises that the term 'senile' is purely descriptive and does not necessarily iinply the absence of any more specific underlying cause. It is disappointing that this analysis has indicated no means of distinguishing in life between these very different types of cases. This difficulty, however, serves a warning against the diagnosis of myocardial ischaemia in all cases of clinically obscure heart failure in the aged. Auricular fibrillation, which was common in all the aetiological groups and also among the control subjects, did not appear to be related to coronary disease.

Pathogenesis of Infarction of the Right Ventricle

WADE, W. G. (*Brit. Heart J.*, **21**: 515, 1959, Ref. *J.A.M.A.*, **172**: 735, 1960) writes:

It is rare for the right ventricle to be predominantly affected in myocardial infarction, the relative involvement of this ventricle in 2 large series being 1·7 and 3 per cent respectively. In this paper there are presented the pathological and clinical features of 11 new cases of right ventricular infarction, the records of which were obtained from the Institute of Pathology of the University of Belfast. This constitutes the largest series of cases of this kind which has so far been published. Histological material was available in each case. For comparison, the corresponding gross pathological features in a consecutive series of 100 cases of left ventricular infarction investigated in this institute were also assembled.

The author concludes that extensive infarction of the right ventricle is usually a direct result of an occlusion of the right coronary artery. Earlier occlusive lesions occurring in the anterior descending branch of the left coronary artery probably play a considerable role in the pathogenesis of this type of infarct. Since the right coronary artery is usually the dominant vessel on the posterior cardiac wall, there is frequently an extension of the infarct to the posterior interventricular septum and adjoining portion of the left ventricle. It is suggested that it is this extension of the lesion, rather than the involvement of the right ventricle itself, that contributes to the high incidence of circulatory failure in these cases. Extension of the infarct to the right atrium is also relatively common. There is evidence suggesting that pulmonary hypertension plays an aetiological role in right ventricular infarction. When the thin-walled right ventricle becomes infarcted, the lesion is particularly liable to become transmural; hence, rupture, pericarditis, mural thrombosis, and pulmonary embolism are frequent attendant lesions.

The histological features of right ventricular infarction closely resemble those of left ventricular infarction. Without the assistance of an electrocardiogram including right precordial leads, there is little chance of achieving a precise clinical diagnosis. The prognosis in patients with right ventricular infarction tends to be poor, and the increased risk of pulmonary embolism makes the use of anticoagulant therapy imperative, although the tendency for hepatic insufficiency to develop necessitates great care in its use. Several physiological factors acting through the intercoronary collateral circulation are enumerated as being responsible for the relative immunity of the right ventricle to infarction.

Return to Work of Patients with Angina or Myocardial Infarction

GREEN, R. S. AND BOROUSCH, R. L. (*J.A.M.A.*, **172**: 783, 1960) from the Memorial Heart Laboratory, St. Mary's Hospital, observe:

In the experience of the authors it has never been necessary to resort to surgical procedures to relieve a patient of anginal attacks. Considerations here outlined have led to a programme for building up collateral circulation in the coronary vessels in anticipation of eventual coronary occlusions or excessive demands on the myocardium. It is insisted that the patient be underweight. Factors inducing anginal attacks must be eliminated, and nitroglycerine must not be misused simply to escape the penalties of overburdening the heart. During subsequent rehabilitation the patient should be concerned more about returning to his job than to his advocations. In 13 years of experience with the type of patients here specified, relief from the symptoms of angina, even of the so-called intractable type, has been achieved in all patients who adhered to the plan, and most of them have returned to their former occupation.

CURRENT TOPICS

LEADING CAUSES OF DEATH IN SELECTED COUNTRIES

Ranking deaths from each cause in numerical order is a popular method of presenting mortality statistics. Though it has its limitations, it is the best method for answering the question "What are the most frequent causes of death?", and the information obtained is useful in planning action to reduce mortality. The fact that only a few causes of death account for a large proportion of all deaths is of great significance, since specific measures undertaken to reduce mortality due to these causes might considerably lower the general mortality.

In a study published in the WHO Epidemiological and Vital Statistics Report (**12**: 109, 1959) causes of death have been ranked on the basis of the average annual (1954-1956) number of deaths assigned to 41 single categories, or groups of categories, of the abbreviated list of 50 causes of death found in the seventh revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death (WHO Manual, 1957, p. 381).

The following countries were selected for this study:

Canada	Netherlands
United States	Norway
Denmark	Sweden
Finland	Switzerland
France	United Kingdom
Germany	Australia

It has been for a long time the practice of these twelve countries to issue statistics of causes of death.* They also have good medical services, on which adequate registration of causes of death depends so much.

The following interesting facts emerge from the study:

1. The ten leading causes of death are responsible for more than 75 per cent of deaths in the selected countries, except in the Federal Republic of Germany and in France, where the proportion is somewhat lower, being 68·8 per cent in the first and 62·7 per cent in the second.

2. Heart disease,† malignant neoplasms, vascular lesions affecting the central nervous system, and accidents are the most common causes of death in the selected countries, which represent the developed areas of the world today.

3. Heart disease appears as the leading cause of death in practically all countries studied. One quarter to over one third of deaths are due to this cause in practically all these countries except Germany (19·7 per cent) and France (18·1 per cent). Malignant neoplasms are the second most frequent cause of death, being responsible for between 14·3 per cent and 21·6 per cent of all deaths. Vascular lesions affecting the central nervous system rank third (11-16 per cent) in all countries. Deaths due to accidents are in the fourth place (4·5-6·9 per cent of all deaths) in all countries except England and Wales, Northern Ireland, and Sweden, where they rank as the fifth or sixth cause of death. Pneumonia is the fourth cause in Sweden, and the fifth in England and Wales and all the other countries except Denmark, Finland, and Scotland, where it ranks sixth.

The above-mentioned five causes of death together account for roughly two-thirds of all deaths. They therefore indicate the major fields where life might be saved in the population as a whole.

By Age Group

The leading causes of death vary greatly for different age groups.

In the *age group under one year*, birth injuries, postnatal asphyxia and atelectasis rank first as causes of death. Congenital malformations are second and pneumonia is third.

In the *age group 1-4 years* the leading cause of death is accidents in all the countries selected. The proportion of deaths caused by accidents at this age is, for these countries, on the average about 30 per cent of deaths due to all causes; and the specific death rate is about 35 per 100,000 population. In England and Wales, the proportion and the rate are relatively low (21 per cent, and 20 per 100,000 population). The same is true for France and Northern Ireland (15·4 per cent and 19·7 per cent, 26·7 and 21·1 per 100,000 population, respectively). Pneumonia is the second and congenital malformations are the third cause of death in this age group.

In the *age group 5-14 years*, as in the previous age group, accidents are the first cause of death. They are responsible for an average of 38 per cent of all deaths during this period of life in the countries selected, though the proportion ranges between 49·6 per cent in Canada and 27·9 per cent in France. The death rate varies from 11·8 per 100,000 population in France to 32·0 in Canada, with an average of slightly less than 19 per 100,000 population. Malignant neoplasms occupy the second place in all the countries selected. On the average, the proportion of deaths due to this cause is 13·8 per cent of all deaths, ranging from 11·4 per cent in Canada to 15·9 per cent in England and Wales. The average death rate is 6·4 per 100,000 population, with the lowest level, 5·7 in Scotland, and the highest, 7·7, in Norway. Congenital malformations hold third place. Pneumonia is in the fourth place in most of these countries, nephritis and nephrosis fifth.

In the *age group 15-44 years*, accidents remain the most frequent cause of death for all the countries selected except Denmark, the Netherlands and the United Kingdom. In the first two countries and in England and Wales they are the second most frequent cause,

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* In the United Kingdom, separate statistics are issued for England and Wales, Scotland, and Northern Ireland.

† The following groups are included in 'heart disease': chronic rheumatic heart disease; arteriosclerotic and degenerative heart disease; other diseases of heart; and hypertension with heart disease.

and in Scotland and Northern Ireland the third. The lowest death rate from this cause is in Northern Ireland 19·8 per 100,000 population), the highest (49·0) in Canada, the United States, and Australia. The proportion of deaths caused by accidents varies from 13·7 per cent (Northern Ireland) to 30·9 per cent (Canada) of all deaths in this age group, with a median proportion of 22·5 per cent.

Malignant neoplasms generally appear in the second position, except in the United States, where they rank third, and in Finland, where they are fourth. In Denmark, the Netherlands, and the United Kingdom they top the list. The death rate varies from 23·2 per 100,000 population in France to 32·4 in Scotland, with an average of 27·5. Though the death rate is the highest in Scotland, yet malignant neoplasms cause only 19·5 per cent of all deaths registered there in this age group. The average proportion is 18·1 per cent, ranging between 12·5 per cent for France and 25·7 per cent for the Netherlands.

Heart diseases do not drop below the fourth place as a cause of death in this age group. In the United States, Scotland, and Northern Ireland, they occupy the second. The death rate varies from 9·3 per 100,000 population in Norway to 33·0 in the United States, causing 7·4 per cent of all deaths in the former and 17·3 per cent in the latter.

Tuberculosis appears as the second cause of death in Finland, the third in France, and the fourth in Norway, the Netherlands, and the United Kingdom. In the other countries it has a lower rank, ranging between fifth and eighth.

It is interesting to note that suicide and self-inflicted injury appear as the third, fourth or fifth cause of death in this age group except in the cases of Scotland, where it drops to seventh, and Northern Ireland, where it occupies the tenth position.

Though pneumonia is among the ten leading causes of death in all the countries except Denmark, it comes at the tail of the list.

In the *age group 45-64 years*, heart diseases, malignant neoplasms and vascular lesions affecting the central nervous system are the first three leading causes, but the order varies in different countries.

Heart diseases are the first cause of death in Canada, the United States, Finland, Scotland, Northern Ireland, Sweden and Australia, and the second in the other countries. The lowest death rate is that of France (153·4 per 100,000 population), the highest that of the United States (478·5). Heart diseases are responsible for 13·9 per cent of all deaths in France, and 40·4 per cent in the United States.

In countries where heart diseases are the first cause of death, malignant neoplasms are the second, and *vice versa*. Malignant neoplasm death rates vary considerably from one country to the other. Sweden has the lowest rate (220·6 per 100,000 population), and Scotland the highest (340·4). Malignant neoplasms are responsible for between 20·5 per cent and 34·0 per cent of all deaths in the selected countries.

Vascular lesions affecting the central nervous system are the third cause of death for this age group in all the countries selected, but the death rates vary between 69·4 per 100,000 population in Denmark and 145·6 in Scotland. The proportion of deaths due to this cause also varies between 8 per cent and 12·9 per cent of all deaths.

Accidents attain the fourth or the fifth position in all countries but England and Wales, where they are sixth.

It is interesting to note that bronchitis appears as the fourth cause of death only in the United Kingdom, and is not among the ten leading causes in the other countries except in the Netherlands, where it is seventh.

In the *age group 65 years and over* the same three most frequent causes of death appear as in the previous age group, and in general in the same order. Heart diseases cause in some of the countries more than 40 per cent of deaths in this age group (United States 46·5 per cent, Canada 42·4 per cent, Australia 40·7 per cent). The lowest proportions are in France (22·1 per cent) and Germany (22·7 per cent). In all other countries the proportion is between 30 per cent and 40 per cent.

Vascular lesions affecting the central nervous system are second, except in the Netherlands and Denmark, where they are third. These two causes are responsible for more than half the deaths in this age group.

Malignant neoplasms are the third cause (12·3-19·2 per cent of all deaths), except in the Netherlands and Denmark, where they occupy second place. The three causes just mentioned account for more than two-thirds of all deaths.

Pneumonia appears again in this age group as the fourth cause in most countries, and the fifth in the others (United States, Denmark, England and Wales, Scotland, and Switzerland).

Accidents hold the fourth position in the United States, Denmark and Switzerland, and drop to fifth in the other countries, except for the United Kingdom where they are sixth.

In this last age group, bronchitis comes fourth for England and Wales and Scotland, fifth for Northern Ireland. (*WHO Chronicle*, **14**: 194, 1960).

SUICIDE: A NEGLECTED PROBLEM

The incidence of suicide is on the whole low in the less developed countries, high in the more; and in some countries of very high living standards it has become a problem of considerable proportions. Between ages 15 and 44, it is the second most important cause of death in Japan, the third in Germany, Denmark, Sweden and Switzerland, and the fourth in Canada, Australia and the U.S.A. It is also an important cause of death between ages 45 and 64. The table below, extracted from recent numbers of the WHO Epidemiological and Vital Statistics Report (**11**: 364, 1958; **12**: 345, 1959) gives the number of deaths from suicide for certain years, and the mortality rate per 1,00,000 population from this cause for one of those years, in a number of countries which furnish WHO with statistics on suicide.

Countries	Deaths from suicide (1954-1956*)		Mortality rate from suicide per 1,00,000 population (1955)
	Males	Females	
Canada	2,637	704	7·1
U.S.A.	38,893	10,950	10·2
Japan	30,700	25,520	25·2
Belgium	1,762	658	13·6
Denmark	2,060	1,008	23·3
France	15,983	5,471	15·9
Italy	6,447	2,754	4·8
Norway	607	150	7·4
Netherlands ..	1,221	743	6·0
Sweden	2,009	941	17·8
Switzerland ..	2,346	931	21·6
United Kingdom (England and Wales)	9,436	5,889	11·3
Australia	2,176	760	10·3
New Zealand ..	397	149	9·0

* Except in the cases of Belgium (1954-1955), and Italy, Sweden and New Zealand (1953-1955).

In the U.S.A. some 16,000 people commit suicide every year, as compared with 14,000 who die from tuberculosis and 40,000 who die from motor accidents; in England and Wales the number of suicides, approximately 5,000 annually, is nearly as great as the number of those who die from pulmonary tuberculosis, and slightly exceeds the number who die from motor accidents. More men commit suicide than women, and as age increases the preponderance of male suicides becomes greater.

Durkheim (1897), in his classic study of suicide, divided suicide into three types: the altruistic, in which the individual's life is rigorously controlled by the customs and beliefs of a rigid society and he commits suicide for religious or political reasons; the egoistical, in which he is insufficiently integrated into society; and the anomic, in which he is insufficiently regulated by society and his adjustment may be upset by economic catastrophes or sudden wealth. Examples of the first type are to be found in the ritual suicide practised in some primitive societies and in Japan. Social disorganisation certainly tends to increase the incidence of suicide and may change the pattern: thus in Hong Kong the disintegration of the traditional culture of Chinese society has led to a shift in the incidence of suicide, formerly at its peak in the thirties for men and twenties for women, to a new peak in old age for men and during the menopause for women. But an inherent disposition also plays an important part. The stresses of loneliness and friendlessness act with selective severity on those predisposed to mental illness (to depressive psychosis in particular), and these are often the individuals who commit suicide, whereas others without the inherent predisposition do not. Cause and effect are not easy to distinguish. Do individuals who commit or attempt suicide drift into isolated environments because of the illness that drives them to take their own lives, or are certain environments conducive to suicidal tendencies? Alternatively, is loneliness both a consequence of mental ill health and a factor increasing the chances of suicide? The whole problem of suicide is extremely complex, the causes not very well understood.

Further progress in the study of suicide according to Professor Martin Roth (1959) is unlikely until statistical investigations are combined with detailed individual clinical studies along socio-psychological lines, of the problems of social integration and cohesion. In these studies aspects on the relative importance of which light needs to be shed are: bereavement, loneliness, poverty, awareness of declining faculties, decreasing vitality, impairment of physical health, and mental disease. Others, especially in younger people and in attempted suicide, are guilt feelings and a desire for self-punishment, hopelessness and fear of the future, aggressive feelings, and the wish, not to die, but to bring about a change in the attitude of some other person. Finally, there is the apparent motivelessness of some suicides or attempted suicides, linked perhaps with the 'death wish' of Freud. Statistical data about suicide are among the most clear-cut epidemiological facts in the whole field of psychiatry, and should lend themselves to intensive inquiry. We might then be able to understand more clearly why there are striking differences in incidence between the more and less developed countries, between communities of different religious denominations, and between urban and rural areas. We might also perhaps be in a better position to prevent attempts at suicide, and provide those who have attempted but failed with efficient aftercare or social support. And we might be able to decide whether those who actually commit suicide and those who merely attempt to do so are distinct groups of individuals, as they sometimes appear to be.

Not until comprehensive studies are made of suicide, nationally and internationally, will it be possible to take the most suitable action to reduce the number of deaths from this cause. (*WHO Chronicle*, **14**: 196, 1960.

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NOTES AND NEWS

World Health Assembly

The Thirteenth World Health Assembly opened in Geneva on 3 May and ended on the afternoon of 20 May. The Chairman was Dr. H. B. Turbott, Director-General of Health of New Zealand. The session was attended by delegates from 86 of the 101 Member and Associate Member States of the World Health Organisation, including those from three new Members, Cameroun, Kuwait and Togoland, and from eight new Associate Members, Cyprus, Central African Republic, Republic of Congo, Republic of the Ivory Coast, Gabon Repub-

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lic, Republic of the Upper Volta, Republic of the Niger and the Federation of Mali.

A programme of work for 1961, with a working budget of $18,975,354 was adopted. This figure represented the Director-General's proposal of $18,569,620, with additions introduced during the Assembly, including $200,000 to finance additional assistance for new Members and Associate Members. The eradication of communicable diseases was the largest single item in the new budget, even without considering the Malaria Eradication Special Account, which receives voluntary contributions for the world-wide malaria eradication programme.

The budget also provided for assistance in many other aspects of public health, as well as for central technical services, epidemiological intelligence services, health statistics, standardisation of drugs and for the Organisation's extensive list of publications.

Six countries were elected to designate a person to serve on the WHO Executive Board. They were: Ghana, Thailand, Jordan, Korea, United Kingdom, Argentina. The 12 other members of the Board are from the following countries: Brazil, France, Gautemala, Iran, Ireland, Luxembourg, Nepal, Peru, Sudan, USSR, Venezuela and Viet Nam.

The Assembly also requested the Director-General to take the necessary steps on behalf of WHO with the League of Arab States, with a view to concluding an agreement to define the sphere of co-operation in health fields.

Among the topics that received particular attention were:

Malaria eradication: The Assembly expressed satisfaction with the technical achievements of the world-wide malaria eradication campaign but, on the financial side, stated that the stage has been reached when the financing of eradication operations through the Malaria Eradication Special Account on a voluntary basis was not possible without the full support of all the economically more privileged countries of the world. It was decided to establish an official register listing areas where malaria eradication had been achieved, after inspection and certification by a WHO evaluation team.

Smallpox eradication: Progress was reported towards the goal of the eradication of smallpox; the number of cases in 1959 was considerably less than in 1958. India and Pakistan were still seriously affected by smallpox, but India had started a number of pilot projects for control, and Pakistan was showing active interest in the matter. The danger of reintroducing the disease, from existing foci of infection, into countries which had been freed from it, was constantly re-emphasised during the discussions on this subject. Two governments offered gifts of smallpox vaccine to aid the campaign.

Radiation health: The Assembly defined the role of WHO in radiation health to include the protection of mankind from ionising radiation hazards, whatever their source, and the development of medical uses of radiation and radioactive isotopes. It was deemed necessary to emphasise the need of teaching and training of technical personnel of Member countries and to assist these countries to accept their responsibilities and accelerate their activities in the public health aspects of radiation from all sources.

Headquarters accommodation: The Assembly took the necessary legal action to authorise the construction of a new headquarters building for the Organisation in Geneva, at a cost not exceeding 40,000,000 Swiss francs. The Director-General was asked to conclude an agreement with the Swiss Confederation, and the Canton of Geneva, and to arrange for the necessary contracts with the architect, builders and suppliers.

14th World Health Assembly: The invitation of the Government of India to hold the 14th World Health Assembly in New Delhi in February, 1961, was accepted. India will meet $250,000 of the extra costs involved.

Other decisions taken by the Assembly included: the indefinite postponement of a *World Health Year;* it was considered that the Organisation could not afford to divert funds and personnel from urgently needed health campaigns. The programme for an *intensified programme of medical research* was endorsed by the Assembly, and the necessity for training qualified personnel essential to its execution was firmly underlined.

The technical discussions this year dealt with "The Role of Immunisation in Communicable Disease Control"; from which it was concluded that smallpox vaccination still held first priority in the world, despite the varying epidemiological picture presented by different countries.

Summing up the Assembly's work Dr. Turbott drew pointed attention to the problem of malaria eradication. Eradication was undoubtedly possible he said, but for the financial problems which must be solved.

"Our experience is widening, and our fundamental research continuing, so that the spectre of mosquito resistance does not seem to be insurmountable. Nevertheless, what has already been accomplished will be wasted unless the global objective is achieved," the President said.

"It is a matter of money," he added and appealed to more fortunate nations to help those that are less fortunate. "We pass this challenge on to our governments. Give us the necessary means. Malaria can be conquered and teeming peoples will find new prosperity."

Another enemy, smallpox, retains high priority in the work of WHO. Countries with active vaccination campaigns are reporting freedom, or rapidly lessening incidence. "The writing is on the wall. The eradication of smallpox is on the way."

Each Assembly sees us more deeply engaged in the fight against communicable disease and "faith in our Organisation strengthens," the President told the Assembly. He mentioned, in this connection, the campaigns against venereal diseases, tuberculosis, leprosy, trachoma—"all under attack on a world front".

"Bilharziasis, another stultifier of man's efforts in the tropical belt of the world, increasingly a danger as millions of acres come under irrigation, provides a further challenge that we are accepting. New targets have been erected. There is no end to our work."

At the same time, "We are continuing in high priority our training and fellowship programme. Over

two-thirds of the world urgently cries out for more medical, nursing and technical personnel. But our training scope is widening. Modern medicine cannot work in isolation but demands the aid of other disciplines. In radiation work we need meteorologists, physicists and biochemists; in health education, anthropologists; in social medicine, psychologists."

Dr. Turbott also recalled that WHO in co-operation with the International Atomic Energy Agency, and other appropriate agencies, had accepted responsibility in the broad field of protection of the peoples of the world from the hazards of ionising radiations from whatever source. "In our discussions we have laid down guide lines for national health authorities as to their responsibilities in this field. Should these be followed, WHO will have ever-growing usefulness in aiding the training of the needed skilled personnel and in stimulating epidemiological and basic research on the effect of radiation in human beings," he concluded.

International Tuberculosis Conference, Toronto

The International Union Against Tuberculosis announces that the XVI International Tuberculosis Conference will be held in Toronto, Canada, September 10th-14th, 1961, under the Presidency of Dr. G. J. Wherrett.

An interesting scientific programme has been arranged, as well as visits to hospitals and clinics. Tours in the City of Toronto and surroundings will provide opportunities to observe various aspects of Canadian life. There will be a full day trip to Niagara Falls and pre-and-post-convention tours in Canada and the United States. Special arrangements for travel, with reduced fares for chartered aircraft, will be made through national travel agencies.

Full details of the Conference can be obtained from the General Secretary Dr. C. W. L. Jeanes, 265 Elgin Street, Ottawa, Canada, or Dr. Wm. Gellner, Executive Director, International Union Against Tuberculosis, 15 Pomereu Street, Paris 16, France.

Copenhagen Isotope Conference

A small committee of experts has assisted the International Atomic Energy Agency (IAEA) Secretariat in the selection of 131 scientific papers from 18 countries to be presented at the Conference on Radioisotopes in the Physical Sciences and Industry, which is being organised by the IAEA in Copenhagen 6-17 September 1960 with the coöperation of UNESCO. More than 300 papers had been submitted to the IAEA Secretariat. It is expected that the final number of papers for presentation will amount to approximately 150 and that more than 700 scientists will take part in the two-week conference, which is the largest so far organised by the International Agency. The Conference will deal with the uses of isotopes in geophysics, metallurgy and solid physics, nuclear physics, industry, analytical, recoil, organic and physical chemistry and also the production of radioisotopes, the preparation of labelled compounds, detectors and instrumentation.

The Danish Government and Atomic Energy Commission are cooperating fully with the International Agency in preparing for the Conference and are providing all the essential facilities and supporting personnel.

Polymers in Medicine

The application of polymers in medicine is still in its infancy. Diverse polymers, for example, polymeric surgical threads, plastic false teeth, cementing bone fractures, plastic artificial joints, plastic substitutes for some tissues of the human organism, synthetic polymers substitute for blood plasma, are well-known.

Blue Iodine—Polyvinyl alcohol, interacting with iodine, form a new complex compound of a blue colour, the blue iodine. Blue iodine destroys typhoid bacilli, dysentery pathogens, streptococci, 'pus' bacilli. It is effective in small concentrations and is absolutely non-toxic. It is said to be a powerful preparation for the treatment of acute infectious gastro-intestinal diseases and diseases of the ear, throat and nose. Films of blue iodine are valuable for healing burns.

A medicine bound with the polymer blood substitute becomes, as it were, a component part of the blood, and with the latter reaches the minutest vessels, and can penetrate with greater or lesser speed through their walls. It is possible to control the length of time during which a polymer blood substitute remains in the organism—from several hours to several days or weeks. —*By courtesy of the U.S.S.R. Embassy in India.*

Apartheid in Blood Transfusion

The South African Government on May 20 published regulations under which white and non-white blood to be used in transfusions will be carefully segregated to ensure as far as possible that the same race receives its own particular blood. Under the regulations, to come into force on September 1, white and non-white donors will be bled on separate premises or at the same premises but suitably separated. Records of blood donations will also be kept separately.

Dr. R. Turner, Senior Government pathologist, explaining the new regulations in Capetown said that the racial origin of blood in bottles must be marked and if possible the same race given the same blood. He added that there was no regulation making this compulsory. In fact much of the blood given to non-whites was from whites. There was not enough non-white blood available for all non-whites. He said: "As far as I know, non-white blood is not used for transfusions for whites, though if it were a matter of life and death, I dare say the origin of the blood would not matter."

Sugar with a Difference

French researcher, Dr. Dubois Prevost, announced on 15-6-60 that he had developed a new type of sugar that prevented dental cavities.

The researcher, who is chief of the laboratory at the Bichat hospital in Paris, told a Congress on Dental and Oral Hygiene and Health that his formula was simple—just add a little egg white to the sugar.

Dr. Dubois Prevost said that normally sugar is responsible for dental cavities, which affect 15 per cent

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of children from 3 to 6, 61 per cent from 7 to 15 and 90 per cent of adults.

Using a 40-year-old discovery of Sir Alexander Fleming, the discoverer of penicillin, the French researcher found that the natural product 'Lysozyme', found in large quantities in egg white, was a more powerful bactericide than antibiotics and killed the microbes which caused cavity-producing acids.

The discovery, said the dental expert, may revolutionise the sugar industry.

Rural and Urban Area Diet Compared

Several interesting conclusions may be drawn from the statistics supplied by India to the United Nations, showing it to be the worst fed of 40 countries.

The consumption of calories is shown to have declined from 1,950 per capita per day in 1934-38 to 1,800 in 1954-56. But that the number of calories in the average diet may have continued to fall even after 1956 is indicated by a comparative sample survey undertaken by the Government of India in Singur, Hooghly District, West Bengal, data for which are available.

This survey, and similar investigations in other areas, however, suggest (according to inquiries made in Calcutta) that the consumption of calories is perhaps not much below requirements even now in the rural areas.

The figures published by the U. N. are not disputed by competent medical authorities in Calcutta because allowance has to be made in the statistics for areas with very low nutritional standards. It is also pointed out that the over-all figure for India may have been reached by dividing the total available food by the population, a recognised procedure.

Surveys undertaken in some community development areas in 1955-56 showed that in Saktigarh, Burdwan (West Bengal), in Durgapur, Udaypur (Rajasthan), in Dabra, Gwalior (Madhya Pradesh) and in Rkangarsaral and Patna (Bihar)—all rural areas—consumption of cereals was higher than required and consequently, the intake of calories was higher than needed (by 800 to 1,200 calories) in the three areas outside West Bengal; (one ounce of rice or wheat supplies 100 calories). In Saktigarh the excess was nominal. The figures available for these areas did not take into account consumption of sugar and fruit. Re-surveys in these areas are in progress.

The comparative surveys in Singur show that the fall in consumption of calories was caused mainly by economic depression and the high cost of living. Increased consumption of wheat suggested a shortage of rice even in rural areas in recent years.

But the most serious deficiency in the diet of Indian villagers generally, according to the surveys, is of protein, minerals and vitamins. The unbalanced meal, with the cereal content often much above requirements, has been causing serious diseases among children in the countryside. Only recently have the health authorities been successful in treating early cases without medicine.

A survey now in progress in an urban area in Calcutta shows on the other hand, that there is an overall shortage, described as "a balanced shortage", of almost all the vital ingredients (including carbohydrates, mainly supplied by cereals) in the diet of lower income and middle-class groups. Here a different type of disease originating from under-nourishment was noticed among children. It was found, however, that consumption of animal protein was comparatively greater in the urban area than elsewhere, though much less than the daily 3-oz. requirement of an adult.

The data collected suggest that the diet of many middle-class families in the urban area is no better than that of still lower income groups, and even worse in some cases.

A comparison of the average diet of an adult in the rural area of Singur in 1957 and in the urban area of Chetla, Calcutta, both in West Bengal, shows that while the cereal consumption in Singur, over 17·5 oz. a day (it was 25·5 oz. in 1947), was above requirements (14 oz.), in Chetla it was 15·3 oz. The fall in calorie consumption in Singur from 3,086 in 1947 to 2,230 in 1957 was caused mainly by the fall in rice consumption. While in 1947 Singur recorded neither wheat nor eggs in diet, the same area showed a consumption of 0·60 oz. wheat and 0·04 oz. of egg per adult after a decade during which dietary education was given. This was presumably also the reason for the increase in the consumption of pulses in Singur in 1957, but other items recorded declines, sugar or gur being nil against 0·74 oz. in 1947.

The Chelta diet chart shows considerable similarity to the Singur chart for 1957, except for greater consumption of fish, meat and sugar or jaggery, but it is much worse than the 1947 Singur chart. Closer scrutiny shows the Chetla chart—for an average middle-class family—to be deficient compared with even the 1957 Singur chart in respect of such items as pulses (protein), leafy vegetables (vitamins and minerals) and, of course, cereals.

The Chetla chart gives 2,200 calories against the 2,800 calories considered to be ideal. According to the latest medical opinion an adult needs 2,500 to 2,600 calories for a sedentary job, 2,800 for moderate manual work and 3,000 or more for agricultural or other types of hard labour. A fluctuation of 200 calories either way may not make a great difference, but experts seem to argue that even 1,900 calories or less per day may not cause immediate damage except, loss of weight, though the likely effects on progeny are uncertain.

The more immediate worry of health planners in India now is the lack of protein in the diet, more marked in the rural areas. The Singur and similar surveys have shown that villagers rarely eat fish or meat even once a week and that the consumption of dal, though not uncommon among adults, is practically nil among children because it is popularly considered difficult to digest. The comparatively stronger points in the rural diet are cereals, which include puffed rice in the form of a daily snack, and green vegetables, the quantity of which should be increased.

The village child gets the worst of it even before birth because, though an adult man or woman in a village manages to get some protein through cereals, a pregnant woman or nursing mother, who requires about

double the amount of protein normally needed, does not get it. The child is thus handicapped even before it is born. Moreover, the mother's milk goes dry before it should, and according to general village practice, breast feeding is stopped the moment the child's stomach is upset, thus depriving it of the only balanced diet available to it at that age.

Nutritional Standards

Mr. D. P. Karmarkar, Union Health Minister, inaugurating the first meeting of the National Nutrition Advisory Committee at New Delhi on 17-6-60 said that betterment of the nutritional status of the people must be accorded the highest priority in any campaign to promote the health of the nation. The results of the Committee's work should bring good to the people in the immediate future and not 20 years hence, he said.

The Committee has been formed to tender advice on the nutritional policies to be followed in the country following the recommendations to this effect by the United Nations Food and Agriculture Organisation.

The 21-member committee, of which Mr. Karmarkar is chairman and Dr. Punjabrao Deshmukh, Union Minister of Agriculture is Pro-Chairman, has on it representatives of research laboratories and Union Ministries, and specialists on nutrition.

Medical Supplies Adviser for West Bengal

Mr. J. R. Williams, of the United Kingdom, has been assigned by WHO to advise the Government of West Bengal, India, for a period of three months on the purchase, storage, distribution and estimation of requirements of medical supplies.

Mr. Williams is Supplies Officer to the United Bristol Hospitals, England, and a member of the Pharmaceutical Society of Great Britain. In 1952, he undertook a two-year assignment for WHO as medical stores management officer in Ceylon, returning there for a short 'follow-up' visit in 1958. In 1957, he served in Afghanistan as WHO short-term consultant to the government on the storage and management of medical supplies.

Health Education Appointment

Mr. Gerald Specter, of the United States, has recently been appointed WHO Health Education Adviser in Patna, India. The assignment is for two years and, among other responsibilities, he will advise and assist the government in developing a health education bureau in the State Directorate of Health Services. Mr. Specter has had considerable public health experience and has been working with the Philadelphia Tuberculosis and Health Association as Director of the Health Education Department.

Community Development in India

Dr. Josef R. Wingren, of Finland, has been appointed WHO public health adviser to the health programme in the State of Bihar, India. The aim of this programme and of similar programmes in other Indian states is to integrate rural health services into the over-all national community development programme.

Dr. Wingren obtained his medical degree from the University of Helsinki, and holds a Diploma of Tropical Medicine from the Institute Tropical, Antwerp. For the past five years, Dr. Wingren has been Chief Public Health Officer of the Municipality of Jakobstad, Finland.

Raptakos Medical Research Board Fellowships

The Raptakos Medical Research Board will consider applications for the award of Fellowships for research work on medical and allied subjects in recognised institutions situated in the Union of India. The awards normally consist of Rs. 3,000/- per year for a Fellowship and Rs. 750/- per year towards contingencies approved by the Board. Applications in the prescribed form, should be forwarded through the Guides, under whom research work will be carried out, and the Heads of the Institutions.

Applicants should have an M.B., B.S. or M.Sc. degree or its equivalent or not less than two years' experience in research work after B.Sc. The awards are made annually and may be renewed on the basis of satisfactory progress. Further details may be obtained from the Secretary, Raptakos Medical Research Board, 253, Annie Besant Road, Worli, Bombay 18.

Mobile Health Unit for Rural Hospital

A Mobile health unit was presented by CARE (Cooperative for American Relief Everywhere, Inc.) to the American Marathi Mission in Vadala, Ahmednagar District, at a function on 3-6-60 at the U.S. Consulate-General, Bombay.

The unit, 'a gift to the people of India' by Mr. Graham French, a philanthropist of Philadelphia, was presented to Dr. P. C. Deodhar, Medical Officer of the Mission, by Mr. Paul G. Rusby, CARE representative in Western India. This is the second health unit presented to the people of India by Mr. French through CARE. The unit intended for rural hospital is equipped with power generator, stretchers, medical instruments, examination table, biological refrigerator, 16 mm. film projector, public address equipment and examination tent.

The van will operate in a 30-mile radius of Vadala and will cover a population of 1,08,000 in 145 villages.

Family Planning Orientation Camps

A scheme to organise family planning orientation camps throughout India has been started by the Directorate-General of Health Services.

A three-day camp attended by about 60 persons from eight villages was recently organised by Dr. Pannu, who has left her work in the town to serve in the villages, at the family planning unit at Najafgarh with the assistance of the block development officers and the officer-in-charge of the rural health training centre, Najafgarh.

The participants, says an official press release, discussed various family planning problems and made suggestions to improve the methods of work. They evinced keen interest and earnestness in their discussions.

Orissa Vaccination Bill, 1959

The Orissa Assembly has passed the Orissa Vaccination Bill on the 22nd April 1960 which provides for compulsory vaccination for securing eradication and prevention of smallpox in Orissa. Failure to comply with the provision for primary vaccination within six months of the birth of the child or revaccination every five years will be liable to fine extending upto Rs. 50/- and if the offence is a continuing one with a fine of Rs. 10/- for each day during which the offence continues upto a total fine of Rs. 500/-. Government is making adequate arrangements for vaccination by starting a number of pilot projects from July 1st 1960 for house-to-house and man-to-man vaccination. The projects would cover a population of 10,00,000 and the effect of vaccination and reasons for revaccination if any would also be recorded.

REVIEWS

A Symposium on pH and Blood Gas Measurement—Edited by Ronald F. Woolmer. J. & A. Churchill Ltd., London W. 1. 1959; 8½" x 5½"; pp. viii+210; price 30s. net.

In the recent past physicians and biochemists were the only people interested in the problem of hydrogen ion concentration of the blood.

With the spectacular advance of thoracic surgery and anaesthesiology in the last ten years and the introduction of heart-lung machine for intracardiac surgery the problem of pH regulation and gases in the blood is now of primary interest also to the surgeon, anaesthetist and clinical physiologist.

The book under review is based on ten papers presented and thoroughly discussed by eminent workers in the field under the leadership of Professor R. F. Woolmer. The intricate problems of hydrogen ion concentration of blood and of blood gases have been discussed from all possible aspects of technology with the errors and fallacies of each method. The results and their interpretations and applications in the clinical field have been discussed in a very useful way. Modern technics of blood pH determination by O_2 and CO_2 electrodes and by ultra-micromethod for capillary blood are special features of this book.

The book will be of immense value to all research workers in anaesthesiology and cardiorespiratory physiology.

H. Saha

The Haemolytic Anaemias (Part I: The Congenital Anaemias)—By J. V. Dacie, M.D., F.R.C.P. (LOND.). Second edition, 1960; J. A. Churchill Ltd., London, W. 1; 9" x 5¾"; pp. 339; price 45s. net.

This is the second edition of the part of a book first published in 1954. The present volume (Part I) includes the introductory chapter, the five chapters on congenital haemolytic anaemias and the haemoglobinopathies. Part II, which is expected to be published in course of the next year, will deal with the acquired and secondary haemolytic anaemias, the drug induced haemolytic anaemias, paroxysmal haemoglobinuria and haemolytic diseases of the newborn.

To make the book up-to-date, the author had to work hard. In addition to incorporation of latest relevant information and necessary revisions, part of the book, particularly the section on haemoglobinopathies, had to be completely rewritten. All these have been done admirably well. The reference section of the book is exhaustive and will be very useful for clinical investigators and research workers.

Our sincerest congratulations are due to the author for bringing out this book, complete in integrated knowledge. Like its first edition, the present volume will be warmly welcome alike by the clinical investigators and pathologists.

A point may, however, be made on the incidence of haemoglobinopathies in Bengal as shown in maps on pages 203 and 281. The incidence of Hb. E and also of thalassaemia in Bengal is shown to be sporadic. In Bengalees the incidence of Hb. E and thalassaemia has been found to be 3·9 and 3·7 per cent respectively (see *Abnormal haemoglobins*, Proceedings of C.I.O.M.S. symposium, Blackwell Scientific Publication 1959, page 333). The status of Bengal with reference to the distribution of thalassaemia and Hb. E should therefore be in the category >1 per cent <10 per cent and not sporadic. This minor point on the geography of abnormal haemoglobins is quite understandable and should not in any way detract from the intrinsic merit of this excellent book.

J. B. Chatterjea

The Year Book of Obstetrics and Gynaecology, 1959-60—Edited by J. P. Greenhill, B.S., M.D., F.A.C.S., F.I.C.S. 1959; The Year Book Publishers, Chicago; 7½" x 5"; pp. 573, figs. 27; price $8.00.

This volume contains a critical analysis of articles abstracted from journals received between July 1958 and July 1959. It is needless to say that it maintains the same high standard of its predecessors. Although devoted to American literature in a large measure it also contains analyses of articles published in journals of other countries, e.g., Great Britain and the British Commonwealth, Scandinavia, Switzerland, France, India, Germany, Belgium, Spain, Argentina and Egypt.

The editorial notes in small type richly scattered throughout the volume constitute one of the most valued features of the book. The chapters on Infertility (pp. 317-376 and Endocrinology (pp. 508-574) have been exceptionally brilliant and educative. All who teach, practise, or seriously study the subject must be once again greatly indebted to Dr. Greenhill for his impartial summaries. Our young graduates doing their thesis for the M.O. degree may be reasonably expected to benefit from these volumes.

S. Sur Roy

The Cell of Schwann—By Gilbert Causey. First edition 1960; E. & S. Livingstone Ltd., Edinburgh and London; 5½"×8½"; pp. 120, figs. 40; price 21s. net.

This monograph is the outcome of a thorough study of relevant materials from the literature supplemented with author's own findings. Every medical student is well acquainted with the name of this cell from his preclinical days because of its role in regeneration of injured peripheral nerves. Histological studies of the past with light microscope have been extended by the electron microscopic findings in recent years; these have clarified to a great extent the hitherto less understood relations between the nerve fibres and the Schwann cell on the one hand and the latter and the neurilemma sheath on the other.

The book is divided into eight chapters and the author has rightly started with the first chapter devoted to Theodor Schwann and his original observations and descriptions of this important cell as far back as 120 years. Professor Causey's studies are not confined only to an elaboration of what is already known, but he has also covered as far as has since been found about its structure and function—normal and abnormal—including neoplasms of Schwann cells, the author has primarily provided information by using new technique of electron microscopy to re-investigate what is already known. In conclusion he has stressed further study of this cell as it may lead to our intelligent understanding of the fundamental principles involved in regeneration of peripheral nerves and deposition of myelin and the application of the latter knowledge to the important groups of demyelinating diseases in the central nervous system where such cells are absent and to ascertain whether its opposite number the oligodendrocytes in the central nervous system play any similar role. References from important literatures have been provided at the end. The get-up of this book is excellent and bears the typical stamp of Livingstone.

P. Bose

Klinik und Praxis der Urologie: Klinik, Indikation, Diagnostik, operative and instrumentelle Eingriffe, Nachbehandlung—von Prof. Dr. Werner Staehler, Tübingen. Geleitwort von Prof. Dr. Th. Naegeli, Tübingen. Band I. XXII, 892 Seiten; 1034 teils mehrfarbige Abbildungen. Georg Thieme Verlag, Stuttgart, 1959. DM 240.

Clinic and Practice of Urology: Clinic, Indication, Diagnosis, Operative and Instrumental Interventions, Post-operative Treatment (in 2 volumes)—By Prof. Dr. W. Staehler, Tübingen, with a preface by Prof. Dr. Th. Naegli, Tübingen, Vol. I; pp. 892; 1034 partly multicoloured illustr. (in German). DM 240 (price of the whole work about DM 480).

When the author planned a new enlarged edition of his "Operative Cystoscopy" published in 1941, the present most impressive treatise of urology in all its aspects was the result. Based on many years of experience as head of the urological department of the Surgical Clinic, University of Tübingen, the author organised this work not in the usual manner of a systematic textbook but by bringing the reader to the bedside in close contact with clinical problems. To achieve this end, one is compelled to study not only the general review of a particular subject but also the individual case reports of which 153 are included in the first volume with their history, fever graphs, clinical and laboratory findings, cystoscopic pictures, x-ray photographs and a prolonged follow-up. At the end of every chapter one finds a detailed summary, which permits quick orientation about the contents of the chapter and serves as a refresher of one's memory; this 'compendium' is followed by an overwhelming amount of references, especially of Anglo-Saxon literature. This volume deals with medical urology under the following headings: introduction; malformations; inflammations; urogenital tuberculosis; urinary calculi; disturbances of urinary flow caused by changes on the urinary passages; obstacles at the bladder neck; growths. It is difficult to select any one part for special praise as all seem to have been treated with equally loving care; still, the 100 pp. with 159 illustr. dealing with tuberculosis and with 25 illustr. and 200 references devoted to urinary calculi should be mentioned as particularly rewarding reading. X-ray photographs and coloured cystoscopy pictures are so numerous and of such a high quality that they, together with the illustrations in Vol. II, should form a complete urological atlas. Although this volume cannot be purchased separately, it is quite sufficient in itself as a source of all the information anybody could wish for on non-surgical urology. Such a splendid book would be impressive enough had it been written by a board of experts; as the work of one single man it deserves boundless admiration.

Robert Heilig

[The review of Vol. II of this book was published in Vol. 34, No. 10, May 16, 1960 issue, p. 422.
—Ed., *J. Indian M. A.*

OBITUARY

Dr. J. L. Rajdan

Dr. J. L. Rajdan, Deputy Director of Health Services, Gwalior, breathed his last on March 13, 1960. He joined the Gwalior Medical Service and became the head of the Radiology department and Superintendent of Gajra Raje Hospital attached to the Medical College, Gwalior. He was elevated to the rank of Deputy Director of Health Services in Madhya Bharat and in Madhya Pradesh.

Very popular as a physician, Dr. Rajdan was the last president of the Madhya Bharat Provincial Branch, I.M.A. and president of the I.M.A. Gwalior Branch. He was conspicuous for his keen interest in the affairs of the I.M.A. which was sustained till his death. His demise is a distinct loss to the Association and mourned by a host of colleagues and friends.

SUPPLEMENT
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XIX BENGAL PROVINCIAL MEDICAL CONFERENCE, 1960, BARUIPUR

The 19th Bengal Provincial Medical Conference was held at Baruipur, 24 Parganas on the 14th February, 1960. Dr. A. C. Banerjee was the Chairman of the Reception Committee. Dr. P. K. Banerjee was the Organising Secretary. Dr. H. K. Roy of Calcutta presided over the Conference.

On the 13th February, a Socio-Medical Conference was held. Dr. Triguna Sen, Rector, Jadabpur University inaugurated this conference. Shri Sankar Das Banerjee, M.L.A. presided over the function. The annual general meeting of the Bengal Provincial Branch was also held after the Socio-Medical Conference.

Welcome Address

Dr. A. C. Banerjee, the Chairman of the Reception Committee accorded a hearty welcome to the guests and delegates attending the Provincial Medical Conference. In his welcome speech, he said that this was the 4th time, this provincial medical conference was being held at Baruipur. "Baruipar is not a town but a very ancient village. It possesses a Thana Health Centre with 20 beds. Electrification of this area has not been completed. Naturally this health centre has no arrangement for electric lights up till now. Improvements in other respects are being undertaken. Though malaria has been eradicated from this place, other diseases prevail". He appealed to the local doctors to combat all sorts of diseases with courage and fortitude and hoped that their sincere combined efforts will raise the standard of health of this locality from day to day.

Presidential Address

Dr. Himanshu Roy, the president of the conference in his address said :

"Annual Conferences of such nature as is being inaugurated today are not only the venue for scientific discussions and communications but these also provide facilities for free expression of ideas and comments regarding the working of the Association and for ventilation of grievances of the profession in general. It is in such conferences we publicly claim to the administration our legitimate privileges and rights which when earned will enable us to perform our task more effectively, promptly and pleasantly, than at present. In these conferences we take stock of our past activities and make plans for the future. There is a social aspect too in such congregations. We meet our colleagues from different parts of the country, revive old acquaintances and pick up new friendship. All these are very essential and pertinent to promotion of fraternity in the profession.

The Indian Medical Association was born in Calcutta in 1928. More than thirty years have elapsed since its birth but even to this date more than two thirds of the medical profession remain outside the Association. In West Bengal about 4,000 out of 16,000 doctors and in India 22,000 out of 70,000 doctors are on rolls of I.M.A. Our strength has to be increased. Greater unity and brotherhood inside the profession have to be fostered and consolidated if we want our voice to be heard with respect and sincerity. It is not merely the question of increasing our members but there is also the need of improving our quality. I am sure that there are many capable men with qualities of the head and heart outside the I.M.A., who if induced to enter the I.M.A. will hold its banners aloft. With an earnest appeal to you all to strive hard to add to our membership I would now, following traditions of the past, turn to some of the problems facing us. Those I would consider under two headings :

1. Problems inside the profession.
2. Problems in relation to medical relief and public health.

1. Problems inside the profession :

1. Ethics inside the profession :

Though we are certainly getting more and more conscious of the ethics inside the profession—and that is a happy sign—still there is much to be achieved. We should never lose sight of one important objective of all good associations : promotion and establishment of fraternity. If we would grasp our common problems we would be coming closer and understand each other better. If we disagree with each other let us do so gracefully and quietly. In this connection a particular responsibility devolves on the senior members of the profession and those with post graduate degrees. If they practise humility and courtesy in the course of their day to day work, the rest of the profession will follow suit.

2. Inequalities of status between two sets of doctors :

The University qualified doctor with the M.B.B.S. degree and the Faculty qualified doctor with the L.M.F. have been the objects of discrimination both by the public and by themselves. To a large extent this difference has narrowed down, since the licentiates proved their abilities in the condensed M. B. Course. What difference still lingers should be allowed to disappear by allowing the remaining willing licentiates, even to the last man, to qualify for the University degree. Personally I have known many licentiates who could or can stand on their own in respect of general educational and professional abilities.

3. Unemployment amongst doctors :

There are many amongst us—even fairly senior members—who are in need of a job but there are not enough jobs for them. Some of them try to earn their livelihood by private practice, but many of them fail to make two ends meet. There are so many reasons and circumstances which may account for this failure. We have to recognise promptly the reasons and act quickly to avoid deterioration of the state of affairs.

I feel our association has got some part to play in selecting the right sorts of locality for the freshers in practice, in securing them suitable jobs with the government or non governmental institutions inside or outside the State (the I.M.A. did recently help a number of doctors to secure jobs with the Rajasthan Government) and in enforcing the government to implement the much-vaunted subsidised rural medical relief or to absorb them in rural medical and public health schemes around village and thana health centres. In respect of the latter I.M.A. has expressed its views many a time and has represented to the government, but with no appreciable success.

I also feel that the more successful among the senior members of the profession too have a role: each one of them can give a prop to a certain number of young doctors in private practice till they are able to secure their rightful place in the community. A step in combating unemployment may be an extension of the E. S. I. Scheme to include the family of the industrial workers. Also the Life Insurance Corporation of India who have contributed to the present day unemployment among doctors should be made to reabsorb the doctors they have retrenched. These doctors should be properly remunerated and, apart from routine work, their services should be utilised in piling up important statistical data pertinent to health, longevity and life span.

4. MEDICAL EDUCATION:

One particular point I would like to turn to: that is the question of our education which has to be so designed that each member of the profession has a reasonable ability to take the right step in the right direction in matters of medical relief and preventive medicine. We have to improve ourselves. We have to remember that much of the education we obtain after qualifying in the University degree is self education by constant endeavour to brush up our knowledge and skill and add to the same by constant reference to literature, research workers and superior personalities. It is good that the medical people have realised that medicine is a life long study. This was the subject for discussion at the last World Conference on Medical Education. Life being short and art being too long one has to confine acquisition of special knowledge to certain fields. There are able men in the Universities and in the Medical Council and the various specialist bodies like the Association of Physicians, Association of Surgery, Obstetrical Society of India, Cardiological Society of India, Neurological Society of India et cetera, who are trying to evolve of measures and methods for improving basic medical education, postgraduate medical education and specialisation in the country. We have a large number of specialists and educationists in our own organisation who are also the members of the various specialist bodies and who are also in the University and in the Indian Medical Council. Through a harmonius working and with a little determination they should be able to find ways and means of raising the standard of basic and post graduate education. At least let us be patient in matters being tackled by them. What I would entreat of these educational organisations and specialist bodies is that they should take the I.M.A. into their confidence in formulating future plans—their task would be easier if this most representative medical organisation in India, the national medical association, comes forward to assist them in their performance of the task.

Day in and day out responsible people from different platforms have pointed out, even to some boredom, the defects in our medical education, mostly emphasising the low standard and inadequacy of the available practical training which is often given to an overcrowded class in a small space and for too short a time. I need not repeat all these here. As far as I am aware there is no dearth of capable men and really good students in our teaching institutions but the atmosphere they are working in is not at all conducive to proper teaching. Students are distracted by the politics around them and the teachers are discontented in the environment they are in. If the teachers are discontented how can any one expect really good work out of them? They have got very little research facilities and equipment and very little team spirit exists between the clinical departments and the departments of basic sciences. The professors have to waste much of their time in routine work in medical boards. Some of them are constantly on move as examiners in this and that University. Some of them have to leave their place of work in season and out of season to attend scientific and policy making meetings. I wonder when they get the time to teach or study or work in the research problems. It is a costly affair now a days to run proper research departments—if you have to compete with other countries in respect of standard of contributions. Some people can make researches on their own (some famous names of the past come to my mind: Carter, Ross, Robers, Brahmachari) but many will have to be trained either inside the country or abroad. I strongly feel that the spirit of research should be imbued in the student from his very student days by the environment around him and I also feel that the students have a great regard for research workers and original thinkers among their teachers. There should be research facilities in undergraduate as well as post graduate institutions.

I have to point out that the University as well the Government have been utterly neglectful in taking any steps worth mentioning (they may have plans up their sleeves) in this direction.

In respect of the students, what indiscipline they show at times is the result of the environment they are in. I feel the students on the whole are being overburdened by the vast curricula designed for them. Our aim in education should not be lost sight of: we have to make most of them good doctors and not natural philosophers which a few may become. One has to impart knowledge and firm grasp in general principles—the foundations on which they can build up their superstructure according to their abilities, inclinations and circumstances. And we ought to expect that standard of knowledge in their examinations too.

In matters of medical education. The I.M.A., I feel, apart from co-operating with other educational bodies, can immediately take on its own shoulders the task of educating the general practitioners in the country. Very little scope is there in our existing colleges. For this purpose I would strongly urge upon our fellow members of the association to find out ways and means of establishing a college of general practitioners in Calcutta wherein short courses and long courses in different specialities—theoretical and practical—in every conceivable subject useful for the general practitioners—would be held throughout the year and be readily available to the busy general practitioners. Let us not try to adorn them with degrees but try to give them the requisite knowledge and experience so much needed by the general practitioners—our first line of defence against disease and injury.

Various educationists in our line have keenly felt the desire for including humanities in the curriculum of University medical education and I feel our students should be given a course of lectures on the history of medicine and medical ethics if we want our students to be really educated. In the teaching of history it will be good to lay special emphasis on our own ancient system of medicine the Ayurveda. Let us not have any prejudice or jealousy against this ancient system of medicine. Knowledge in history never retards scientific progress rather it hastens its speed, tempo and variety. I also feel that some basic pharmacognosy of Ayurveda could be profitably included in the course of Pharmacology while adventures in the rest of the Ayurveda could be made by a section of our research workers in post graduate departments of indigenous medicines, which I feel should be attached to all post graduate institutions. And these departments should be run by a team work of modern pharmacologists and ayurvedists. Our people must learn how to work together. I have got an impression that our pharmacological departments in teaching institutions have got much to learn from their compeers in nonteaching research organisations attached to some of our commercial firms. Much time of our student is wasted in memorising the dosage of galenicals and incompatibilities in mixtures. They could be taught real pharmacology and should be given the opportunity to see and carry out themselves simple pharmacological experiments. Con-

DR. A. C. BANERJEE
CHAIRMAN, RECEPTION COMMITTEE

DR. H. K. ROY
PRESIDENT OF THE CONFERENCE

DR. P. K. BANERJEE
ORGANISING SECRETARY

sidering the modern trends in clinical and laboratory research we must admit that our training in pharmacology and biochemistry need a complete reorientation. On looking at the excessive burden of curriculum on our students I wonder whether we should not start specialisation during the undergraduate course after a preliminary common course in basic matters as is the current practice in Engineering Colleges. Their students choose up special lines from their very undergraduate career. Why not this in the medical line?

5. MEDICAL RELIEF AND PUBLIC HEALTH :

Now I may be permited to make some observations in respect of medical relief and public health. Both curative medicine and preventive medicine should receive care and attention and schemes improving both should be knit together wisely. The I.M.A., in matters of prevention of some of the communicable diseases, has always emphasised upon the need for timely completion of the vaccination programmes and has represented to the proper authorities on several occasions the urgent necessity of arranging safe water supply to minimise the incidence of water borne diseases. If there be will and the requisite competence, the public health departments of the State and of the Calcutta Corporation should be able to stamp out many of the prevalent infections. A common excuse for failure is want of funds. The I.M.A. feels that the authorities should find the funds somewhere and we know the generosity of organisations like W.H.O. and other international agencies could be called upon besides funds raised from the public. While there has been some progress in respect of some acute infections conditions and tuberculosis, hardly any step has been taken in regard to the chronic devitalising diseases like chronic parasitic infections of the bowels which can be responsible for much of malnutrition, wasting, chronic sickness and absence from work and dejection of spirits. If you want to develop a vital Bengal, you must wipe out amaebiasis, giardiasis and helminthiasis. These diseases are not sufficiently spectacular to draw and win our attraction but probably each one of us has the personal experience of the enervating effects of these diseases. Public health activity does not merely mean tackling (and sometimes bungling) a few diseases. From every platform people speak of positive health and yet activities to achieve this are inadequate and very meagre.

Ladies and gentlemen, it is true that malaria has been controlled with considerable success and some good work is being done in other fields like filaria, leprosy and tuberculosis but this should not provide a smoke screen of complacency blinding us to defaults in various other spheres of public health. The complexities of factors underlying epidemics and various endemic infections make it imperative that a simultaneous attack on all fronts by the Government—Central and State aided by the international agencies, voluntary agencies, the Indian Medical Association, local authorities and the public, be made.

With regard to tuberculosis, besides B. C. G. vaccination, I would suggest systematic use of I. N. A. (isonicotinic acid hydrazide) for all home contacts when we are treating the patients in their home surroundings. Due to want of beds for tuberculosis patients it is not possible to segregate all our infective tuberculosis patients and something has to be done for controlling spread of the disease to other members. With regard to the B.C.G. vaccination programme I have to praise the good work that is being done but one is painfully aware that follow up work and study of Tuberculin conversion rates are meagre. The scope for collecting much valuable scientific data is being wasted.

We have not so far made any headway in the prevention of diphtheria, enteric fever and virus diseases in the country. With regard to diphtheria an intensive immunisation programme is urgently indicated and we ought to have the prophylactic toxoids prepared in this country. With regard to virus diseases, each bacteriological laboratory of the government should be provided with a virus unit manned by properly trained personnel. We have been neglecting our virology for a long time.

Let us not overlook the incidence of typhoid fever in the country. I would say there is plenty of it in the country. But what measures have the public health authorities taken in respect of its control? Practising physicians have also not been doing their very essential role in preventing spread of this infection.

I would urge upon the Government to think seriously the question of opening zonal laboratories in different zones in big cities, in the towns and in various districts where from poor people can have their laboratory investigations at a cheap cost. These laboratories should be under the guidance and assistance of the bigger and more equipped central laboratories in medical institutions.

It is common knowledge that nutrition is the basis of all health activities and it is also well known that malnutrition and undernutrition primary or secondary are rampant in the country. Insufficient food production, lack of availability and the high prices of essential food commodities are at the back ground. The food for many of us is unwholesome. Even, rice our staple food obtainable at the fair price shops is not fair! It is dirty, full of gravels and every day the housewife has to spend a lot of time in sorting out the healthy grains. The health departments of the government and the Corporation should arrange for inspection of the rice and other food grains sold out from the Government shops and private groceries.

Public health authorities will also have to pay their immediate attention to environmental hygiene. Though tube-wells have been sunk and resunk and masonry well built a large proportion of our people do not have a source of protected water supply to which I have already referred and the means of disposal of excreta in many of the towns and villages are most unsatisfactory. I feel that sound sanitation programmes should be made and promptly given effect to. I am aware that our government is vexing itself over the question of river pollution by sewage and industrial wastes which curtails the utilisation of the already limited sources of water supply in the country in addition to causing serious risks to health and life.

While industrial health service is receiving some attention, school health and mental health services have received scant attention. The I. M. A. (Calcutta Branch) has been focussing its interest in evolving a suitable programme for improvement of the School Health services and I hope the government will come forward to accept and implement some of the important suggestions made by us. As regards the mental health services hardly any progress has been made by the State. We have not got any State Hospital worth its name where mental patients can be admitted investigated and treated on modern lines. There is not a single institute for treatment of the drug addicts. So many lacunae in so many spheres and we call ourselves a Welfare State!

A very recent development in relation to health and economic Welfare of the country is the Family Planning Campaign and we are happy to note that Family Planning Association of India has started some good work and the Central Government, it seems, has taken up the issues with enthusiasm. The I. M. A. has unequivocally expressed itself in favour of family planning. Whatever is being done, a question poses itself "can it be possible for India to reduce its birth rate and slow down its population growth quickly enough to facilitate greatly its economic development?" A 50 per cent reduction in the rate in the next twenty five years, if achieved, will mean material and useful reduction. In the matter of application of methods, one has to recognise the difficulties with the illiterate, ignorant and apathetic rural people. Also our culture is oriented towards large families and to many the very idea of prevention of birth is not ethically acceptable. I feel that the success of a family planning programme shall largely depend on the co-operation of the masses and on the evolution of a cheap, harmless, easily administered fool-proof method in place of chemical mechanical methods in current usage in the West. It is gratifying to note that good research work is being carried out by one of our colleagues Dr. S. N. Sanyal, in the development of an orally effective contraceptive.

Five year plans are the order of recent years but how much of these plans is implemented. It has been our unfortunate experience to note that even the modest provision for health made in the first five year plan had remained unexpended and the shortfall in expenditure of the planned provision was appreciable. The performance vis-a-vis the second five year plan has been also meagre and naturally people become impatient. The State should not allow lapse of funds leaving the urgent health problems unattended to. If the recommendations for the Panel of Health set up by the Planning Commission on the eve of the Second Five year plan were implemented, there would not be any excuse of the lack of trained personnel.

Finally, let me turn for a moment to the present organisation of health services and hospitals in the State, which leaves much to be desired. In our hospitals there is want of space, want of proper wards, want of proper departments and they are under-staffed. The administrative machinery is old though now and then some parts here and there are changed to adapt to changing circumstances. These remarks are applicable to all hospitals, whether government or private. My point is either help the hospital or close it down or take away its management and establish a good hospital.

Full powers are not given to able and competent men with high academic achievements and research spirit in improving and remodelling their departments. The powers are usually in the hands of those who have never handled a patient for long but have seen the curative medical world through a spectacle of outmoded bookish knowledge or through the spectacle of preventive medicine. Of medical management they know little and of medical research less. I do not grudge their handling of papers and pens but I do mind when they come to dominate over people who are experts in their Jobs. A few of the experts may have been lucky to be in the good books of the powers that be, but this is not the lot of larger numbers. I would ask the heads of various organisations to look into these points and mend the state of affairs. I would also ask the Government not to try to mix up teaching cadres with the nonteaching ones. Teachers and research workers have to be created through a long time devotion and application. Overnight conversion of all the departments into nonpractising ones should not be attempted as many able persons will slip out and the institution will suffer a loss or the people will be deprived of services of some experts in their domiciliary treatment. The Government must appreciate that private practice is not merely private practice but it is private service and the people have the right to have themselves treated privately by men of their choice. After all, by private practice one does not drain off the public exchange and for the part time workers the hours of practice can be regulated.

RESOLUTIONS :

The following resolutions were passed :

1. *On the death of Dr. Joseph*—This Conference deplores the sad and untimely death of Dr. Joseph, PH.D., a scientific worker at the Agricultural Institute, Delhi, who is reported to have committed suicide under unbearable economic pressure and serious mental agony arising out of lack of facilities to change his lot.

While recording its deep sympathy to the bereaved family of late Dr. Joseph, this Conference recalls this incident as a glaring example of administrative failure to properly utilise the trained personnel that are already available in the country resulting in wide-spread frustration and moral set-back.

In this connection this Conference deems it necessary to point out once again that though the attention of the State and Union Governments have repeatedly been drawn from this platform to the colossal wastage of trained medical manpower in India and particularly in the State of West Bengal, no concrete step for suitable utilisation of this precious material through proper planning and disbursement has yet been taken.

This Conference urges upon all scientific workers to work in closer co-operation for prevention of recurrence

of such incident. This conference further calls upon the medical profession to send financial aid liberally to Dr. Joseph's family.

2. *On standardising the hospitals*—This Conference notes with serious concern the delay in standardising the hospitals, both Government and non-Government ones, and especially their Out-patient's Departments, as a result of which there is no uniformity in the standard of each type of treatment one receives in the different hospitals and an undue brunt of pressure with consequential ill-effects falls upon a few teaching institutions.

In the opinion of this Conference, the basis for public criticism against hospital management being the aforesaid defect, it is incumbent on the Government to expedite standardisation of the hospitals on the lines of suggestions of I.M.A.

3. *On Employees State Insurance (medical benefit) Scheme* :

(a) While appreciating the recent decision of extension of the ESI Scheme to the Districts of 24 Parganas and Hooghly, this Conference feels that proper hospitalisation facilities as per accepted principle of the ESI Corporation (1 :800 each for General and T.B.) should be provided for both implemented and extended areas by constructing separate zonal hospitals.

This Conference is of opinion that extension of the medical benefit to the families of insured persons be immediately be given effect to in the implemented areas, as well, to have the scheme a success.

(b) This Conference notes with deep concern that the Insurance Medical practitioners are still being deprived of substantial amount of remuneration resulting out of erroneous disentitlement of insured persons from medical benefit which has been still persisting in most of the disentitlement cases even after the stated revision of the relevant procedure in respect of disentitlement.

This Conference while reiterating the previous resolutions strongly urges that arrangements should immediately be made for payment of capitation fees to the Insurance Medical Practitioners for the period of disentitlement in respect of the insured persons who are re-entitled on receipt of the Contribution Card and/or certificate of continuing employment by the Regional office.

(c) In consideration of the list of minimum Medical and Surgical Equipment to be maintained by an Insurance Medical Practitioner in his clinic as recently circulated by the Director of Health Services, West Bengal, this Conference is of opinion that the list contains certain items which are not necessary for any general medical practitioner in their usual practice.

This Conference thus entreats upon the authorities concerned to withhold enforcement of the stated list pending modification in consultation with the Indian Medical Association, Bengal Provincial Branch.

(d) In consideration of the cost of ordinary drugs required to be supplied by Insurance Medical Practitioner free of cost, had recently gone up to a great extent as well as the cost of establishment and living had also gone up to considerable extent, this Conference urges upon the authorities concerned (the State Government and the ESI Corporation) to consider the enhancement of capitation fees which were agreed upon on the basis of the index to about 8 years back when said index was much lower than at present. The basis of enhancement should be calculated on the present index in comparison to the past.

4. *On registration of unqualified medical practitioners* —This Conference views with grave concern the recent organised move by persons not properly trained in scientific medicine to get registration under the West Bengal State Medical Council to practise modern scientific medicine and draws the attention of the authorities concerned that such registration will be highly detrimental to the interest of public health and healthy growth of modern scientific medicine. With recent advancement and research, the practice of modern scientific medicine has become extremely delicate and depends largely upon the knowledge of basic sciences and as such without this knowledge it will not only be inefficacious but positively dangerous. Moreover, as the State of West Bengal is already surplus in registered medical practitioners, there is hardly any need to register persons other than those passed from the Medical Colleges.

This Conference suggests that those untrained persons may suitably be absorbed as Auxiliary Health Personnel after proper training, as there is dearth of such auxiliary personnel in West Bengal.

5. *On distribution of poisonous drugs*—Whereas highly poisonous drugs such as 'Andrex' 'Folidol' 'Rat Bomb' are being distributed or sold by the Agricultural Department of Government of West Bengal or their agents or by hawkers, grocers and others, to ignorant and uneducated cultivators for the control of jute pests, rats, and the like,

Whereas due to such indiscriminate distribution of these drugs, cases of suicidal, accidental or even homicidal poisoning are being reported frequently where these drugs are proved to have been used, as would be learnt from Rural Health Centres and village practitioners,

This Conference asks the Government of West Bengal to take adequate steps for the supervision and control of distribution of these drugs and for this proper education of the cultivator in their handling and use, so as to prevent the occurrence of such cases of poisoning.

6. *On family planning*—This Conference appreciates the move by the State Branch in sending a well-thought out scheme for the Family Planning to the Central Government through I.M.A., Central Office and requests the Central office to urge upon the Government for its early sanction and implementation. It also requests the active branches of the State to take up the issue with proper earnestness and arrange to start at least one clinic under the supervision of a Branch as early as available and possible. This Conference is further of the opinion that while the necessity of Family Planning is, in principle, agreed upon, the working of the scheme should be discussed at specialists level including Demographers and Geneticists (from the Eugenics point of view) lest the family planning measures lead to development of an intellectually unbalanced society at the end of certain period of operation of this Scheme.

7. This Conference recalls the resolution on phased nationalisation of the Health Services of the State of West Bengal, passed at the 18th Bengal Provincial Medical Conference held at Banarhat, last year, and recommends to the Government of West Bengal to plan and implement this programme of phased nationalisation in such a way that the considerable number of unemployed and under-employed medical men of the rural and urban areas of West Bengal are fully utilised for the betterment of health of the general population without the least possible delay, in order to have a check on the wastage of such valuable trained manpower of the State.

This Conference further urges upon the Government of West Bengal to increase the percentage quota in the Health Budget to provide more funds to the Health Ministry, so that such programme of phased nationalisation may be accelerated.

8. This Conference reiterates the previous demand of the I.M.A. and urges upon the Government of West Bengal to utilise by consultation or otherwise the good offices of the I.M.A. the only representative body of the medical profession of India, before introducing any Bills relating to any Public Health and Medical Relief measures, and while implementing such measures after they are passed by the Assembly.

BRANCH NOTES

DELHI BRANCH—The hony. secretary, Delhi Branch, I.M.A. circulates the following :

DELHI SHOPS AND ESTABLISHMENT ACT :

Fresh negotiations with the Pharmacists Association, initiated this time by the Delhi Administration, have resulted in a mutual understanding stated below :—

This understanding has been ratified by the Association at its Extraordinary General Meeting held on 28th March 1960, and is circulated to the members with the request that they will all without exception observe all the provisions contained in this "gentlemen's agreement" in all details in an honourable manner in the good name of the profession and of the Association. The terms mutually agreed upon are to be observed with effect from 1st April 1960 on experimental basis for a period of four months on the expiry of which the matter will be reviewed and if the experiment proved to be an unqualified success to the satisfaction of the Delhi Administration, the agreement as indicated above will be finalised and the Delhi Administration will recommend to the Government of India to grant total exemption to the medical profession from the Delhi Shops and Establishment Act. Till then the enforcement of the Act will be kept under suspension. The decision taken by the Association today while unanimously ratifying the terms of the decision is mandatory and binding on all the members of the Association and reads as under :

1. SALARY OF STAFF :

Payment of salary to the staff should be made by the 1st day of every month and in no case later than the 7th of the month.

2. *Leave and other privileges for the staff* :

(i) Casual or sick leave per year with pay up to 12 days (non-accumulative).

(ii) *Privilege leave.* After the continuous service of 12 months the compounder or employee will be entitled to privilege leave of 15 days per year (accumulative up to a maximum of 1 month). If the leave is not availed of, the employees will be entitled to pay in lieu thereof for fifteen days in the year.

Casual and privilege leave will not be allowed to be combined together.

(iii) *Medical aid.* Free professional services to the employee, his wife and children.

(iv) *Hours of work.* The working hours of the Clinic should be adjusted in the morning and evening session in such a way that they do not exceed 4 to 5 hours in the mornings and 4 to 3 hours in the evenings up to 8 hours a day without jeopardising the interest of the patients specially in emergencies.

(v) *Weekly full holiday.* Observance of one full holiday in a week.

(vi) *National holidays.* 15th August, 26th January and Mahatma Gandhi's birthday to be observed as National Holidays.

(vii) *Religious holidays.* Four holidays in a year (to be determined by the parties concerned).

(viii) *Domiciliary visits by staff.* If a compounder is required to attend at a patients' residence outside the scheduled working hours of the clinic the doctor is expected to ask the patient to pay extra to the compounder for that work.

AGRA BRANCH—World Health Day was celebrated on 7-4-60. Dr. T. C. Basu Chaudhary presided. Dr. P. N. Wahi inaugurating the function, said that malaria should be declared as a notifiable disease. Dr. K. S. Mathur gave a general view of malaria. The anti-malaria officer of Agra described the practical measures taken at Agra to eradicate malaria. A sub-committee was formed in the meeting to acquire land for a building of the branch.

ALIGARH BRANCH—The members of the branch in a meeting (date not given) condoled the death of Dr. Lekhraj Singh, the founder-member of the branch by a suitable resolution, copy of which was also sent to the bereaved family.

ANAMALLAI BRANCH—The annual general meeting of the branch was held on 23-4-60. Twelve members were present. There were also 5 invitees in the meeting. The annual report with the statement of accounts for the year 1959-60 were passed. Office-bearers for 1960-61 were elected with Dr. N. S. Menon as president, Dr. M. K. R. Jayachandran as vice-president, Dr. P. Satyanarayana Rao as hony. secretary, Dr. Padmajan Pillai as joint secretary, Dr. M. A. Razak as central council representative. Dr. M. V. Krishnamurthy, D.M.O. Coimbatore gave a talk on Cortisone. Dr. R. Mahadevan spoke on Errors in Diagnosis. Dr. K. Madhavan Kutty read a paper on Blood Pressure.

BALLIA BRANCH—A meeting of the branch was held on 7-4-60 with Dr. Ved Ratna in the chair, to celebrate the World Health Day. Dr. S. C. Banerjee, D.M.O.H. opened the Symposium and Dr. R. S. Singh and Dr. N. K. Mullick, malaria officer spoke suitably on the occasion. Dr. Ved Ratna closed the symposium by pointing out the importance of Malaria Eradication programme.

BENGAL PROVINCIAL BRANCH—The annual report of the Branch for 1958-59 shows varied activity in many spheres. Starting in 1935 with 4 branches and 464 members, the branches now numbered 116 and membership stood at over 4,000. The provincial council met 5 times and the working committee met 9 times.

The following committees were formed and did useful work :

Ethical and Privileges Standing Committee ; Medical Education Standing Committee ; Health Services Standing Committee; Benevolent Fund Committee; Bengal Medical Relief Committee; Building Standing Committee; E. S. I. Standing Committee; Hospital Standing Committee; Development and Planning Standing Committee; Life Insurance Sub-Committee; Five-Year Plan Committee; Doctors' Benefit Committee; Public Health Committee; and the Committee to go into matters arising from enhancement of C.F.C. and opinions expressed by the representatives of the Central Working Committee. A study group was formed to study the proposed domiciliary treatment scheme as circulated by the West Bengal Government.

The following schemes were formulated : Family Planning, Doctors' Benevolent, Doctors' Benefit, Motor Car Insurance and Planning and development.

Among notable events mention may be made of participation in mass vaccination and B.C.G. campaigns, Residency training in Canada and the I.M.A. President's visit. The Senior Vice-President of the I.M.A. also paid a visit. Among distinguished foreign guests were Dr. Sir Harry Platt and Dr. Ernert Claxton, Chairman of Council and Assistant Secretary respectively of the B.M.A.

It was due to the efforts of the Branch that a "degree or diploma in dentistry issued by the State Medical Faculty, Bengal, if issued after 31st December 1939" and "Certificates of L.M.P. or L.M.F. issued by the State Faculty of Medicine, West Bengal" have been deemed eligible for inclusion in the gradnates' constituencies for election to the West Bengal Legislative Council.

The following conferences and conventions were held : Provincial Medical Conference; three Socio Medical Conferences at Contai, Serampore and Jhargram : Branch Secretaries' Conference; Sub-Divisional Medical Conference; Round Table Conference with the Labour Directorate of the Government of West Bengal; Press Conference by Dr. C. O. Karunakaran, President, I.M.A. (Central); and C.S.I. Doctors' Conference.

BONGAON BRANCH—The branch offered active relief to the victims of a bus accident in that area on

14-4-60 by personal services as well as supplying medicines to the injured persons.

COIMBATORE BRANCH—A meeting of the branch was held on 26-3-60. Eighty members were present. Dr. D. Sundareswaran presided. At the outset the members condoled the death of Dr. P. Arunachalam, Director of Medical Services. After the official business was finished, Dr. K. S. Krishnan of Madurai delivered a lecture on Havelock Ellis, Sigmmnd Freud, Alfred Kinsey and their contribution to medicine.

A meeting of the branch was held on 16-4-60. Dr. D. Sundareswan presided. Dr. T. V. Sivanandam was congratulated for being elected a member of the Senate, Dr. C. N. Santhanam for having obtained the M. S. degree, Dr. Jayakumar for having passed the M.D. and M.R.C.P. examinations. Nominations for the presidentship and vice-presidentships of the Central I.M.A. was made. Dr. T. V. Ranganathan spoke on The General Practitioners' Role in Glaucoma.

DALTONGANJ BRANCH—A meeting was held on 29-1-60. Fifteen doctors were present. A programme for the Health Week celebration was chalked out. Arrangement for inviting doctors from outside for refresher course was settled. Dr. K. M. Nand, Dy. Superintendent, Sadar Hospital demonstrated a case of Diabetic Gangrene. Dr. P. N. Sinha of Patna gave a talk on the Chronic Discharge from the ears. Dr. S. A. Khan presided.

The Health Week was inaugurated by Rai Bahadur Bholanath Sinha. Baby show, physical feats, health competition, mass inoculation and vaccination, public utility lectures on health were conducted during the week. Prizes were distributed on the last day.

The district medical conference was inaugurated by Rai Bahadur Thakur Bholanath Sinha. Dr. P. N. Sinha gave a lecture on Blindness and the role of vitamins in eye diseases.

DHAKURIA BRANCH—A clinical meeting was held on 3-4-60. Dr. S. Sen spoke on "Coronary Thrombosis". This was followed by discussion by the members. The lecturer answered all questions put to him after the lecture. Dr. A. C. Sen Gupta thanked the speaker on behalf of the association.

ERODE BRANCH—A meeting of the branch was held in the Government hospital, Erode. Dr. C. R. Thiruvengadam assisted by Drs. A. Abu Baquer, Mrs. Maragadavalli, demonstrated some surgical and medical cases, viz. (1) 2 cases of Fracture Femur treated with pin traction, (2) one case of Fracture Femur treated with skin traction and 1 case of duodenal ulcer with vomiting operated on. Posterior Gastro-jejunostomy with vagotomy done.

GORAKHPUR BRANCH—A meeting of the branch was held on 28-4-60. Dr. K. N. Srivastava presided. Thirtyfive members were present. Dr. S. Bose spoke on Polyneuritis following anti-rabic treatment and Neurodermatitis; Dr. R. K. Singh demonstrated a case of Abdominal Pregnancy in which the placenta was attached to the greater curvature of stomach; Dr. H. N. Srivastava showed x-ray films on (1) Craniostenosis, (2) Absence of External Ear, (3) Hand-Schuller-Christian Syndrome, (4) Pituitary Tumour, (5) Paget's Disease, (6) Jacksonian Epilepsy.

The monthly meeting of the branch was held on 31-5-60. Dr. B. C. Mukerji presided. Forty members were present. The members condoled the death of the wife of Dr. K. S. Sinha who died on 17-5-60. Dr. Mukerji introduced Dr. Miss N. Bhatia, daughter of Dr. M. V. Bhatia to the members. Dr. N. M. Seth presented a case of Papilloedema, Dr. S. Bose, a case of Scapulo-Humeral Myopathy and 2 cases of Post-Encephalitic Parkinsonianism; Dr. S. D. Tayal, interesting cases of Aneurysm of the right femoral artery in a young male of 25; Dr. K. N. Srivastava, a case of Volvulus of Pelvic colon (operated); Dr. B. C. Mukerji presented (1) 2 cases of Ileocaecal Intussusception, (2) 2 cases of Hydronephrosis due to aberrant renal vessels, (3) 1 case of malarial Myositis. Dr. Major J. N. Jaswal gave a short talk of problems on insanity; Dr. P. C. Srivastava demonstrated the following x-ray plates of the diseases of spinal cord: (1) Caries of Cervical Spine, (2) Rarly caries of Lumbars, (3) Caries of spine with Spondyloliathesis, (4) T.B. of Sacro-Iliac Joint, (5) Sacralisation of fifth L.V., (6) Vertebra Nigra, (7) Old Trauma of spine, (8) Hemi Vertebra, (9) Ankylosing spondylitis, (10) Block Vertebra, (11) Osteomalacia.

GWALIOR BRANCH—A meeting was held on 2-4-60 to mourn the death of the branch president Lt. Col. J. L. Razdan and of an old member Dr. Batra.

At a meeting on 3-4-60, the office-bearers were elected with Dr. A. N. Mishra as president, Dr. Sada Nand Saxena as vice-president, Dr. B. S. Kale as Hony. Secretary and Treasurer and Dr. Kamal Kishore as joint secretary.

HASSAN BRANCH—A clinical meeting was held on 28-5-60, under the presidentship of Dr. H. Abdul Aleem. The subject under discussion was Headache. The following spoke: Dr. D. L. N. Murthy, Dr. Sriramachar, Dr. K. N. Pillai, Dr. K. M. Varma.

At the general body meeting held on the same day Dr. H. Abdul Aleem was elected president in place of Dr. B. N. Krishna Murthy.

The revised rules of the Mysore Medical Association were put before the house for discussion and amendments were invited within a week.

HINGOLI BRANCH—The branch celebrated its 1st annual day on 10-4-60. About 30 medical men from the district attended the function. Dr. Chandekar presided. Dr. (Mrs.) L. H. Kandlikar as chairman of the Reception Committee welcomed the guests. Dr. Bhale read his annual report. Dr. R. N. Chaudhary of Akola ex-president of Maharashtra Territorial Branch inaugurated the function. The scientific session was an attraction. Dr. M. R. Chaudhary of Akola spoke on Some Surgical Emergencies in General Practice. Dr. S. K. Pradhan of Akola spoke on Blood Transfusions. Dr. (Mrs.) L. H. Kandlikar read a paper on Toxaemias in Pregnancy. Dr. S. S. Bindu read a paper on Some Common Fractures and Dr. V. G. Purohit read a paper on Infantile Feeding. Dr. Mahindrakar demonstrated a case of a young male who had got congenital absence of complete sternum bone. The annual day ended with Dinner.

The annual report of the branch shows that it held meetings every month. Lectures and discussions on clinical subjects were held.

JALPAIGURI BRANCH—A scientific meeting of the branch was held on 22-5-60. Dr. C. C. Sanyal presided. Dr. M. K. Moitra read a paper on How to be a Successful Practitioner.

JULLUNDER BRANCH—A meeting of the branch was held on 31st January '60. Dr. Vidya Sagar, Medical Superintendent, Mental Hospital, Amritsar, spoke on treatment of Hysteria. Major Sandhu was at home to members.

A meeting was held on 6-2-60 in Puri Maternity Hospital, Jullundur, when Dr. Beryl Howie, of Christian Medical College, Ludhiana, spoke on Modern Conception of third stage of Labour. Dr. Savitri Puri and Dr. Dharam Paul were at home to members.

A meeting was held on 28-2-60, when Dr. P. N. Chhutani of Medical College, Amritsar spoke on "Amyloidosis".

A clinical meeting was held in Civil Hospital Jullundur on 3-4-60, when the following cases were presented and discussed (i) Obstructive Jaundice, (ii) Scleroderma, (iii) Ruptured Ectopic Pregnancy.

A clinical meeting was held on 24-4-60 when Dr. K. S. Grewal, orthopaedic surgeon, Medical College, Amritsar, spoke on Backache. Dr. Nayer was at home to members.

Silver Jubilee celebration of the branch was held in Civil Hospital, Jullundur under the presidentship of Dr. Partap Singh, Civil Surgeon. 70 doctors attended. Rai Bahadur Diwan Badri Dass inaugurated the session and invite the attention of the profession towards the need of making medical aid cheaper, so that the patients who were generally poor, could avail themselves of it.

He congratulated the Indian Medical Association on its various activities aimed at ameliorating the lot of the sick and the suffering humanity. Dr. Partap Singh explained at length the constructive measures which could make medical aid cheaper. Dr. Ram Rakha Dhir traced the history of the Association and said that its strength was growing and its aim was to enhance the professional knowledge of the members by inviting eminent doctors to address the members. Dr. Vidya Sagar, Superintendent, Mental Hospital, Amritsar, addressed the members on "Advances in Psychiatry", Dr. Harcharan Singh, Medical College, Amritsar on "Tropical Eosinophilia", Dr. Partap Singh, Civil Surgeon, Jullundur, on "Aetiology of Enlarged Prostate", Dr. M. L. Agarwal, Radiologist, Civil Hospital, Amritsar, on "Radiological diagnosis of diseases of Gastro-intestinal tract", Major Sita Ram, Military Hospital, Jullundur Cantt., on "Early Clinical Manifestations of Ischaemic Disease of Heart", and Major N. S. Choksey, Military Hospital, Jullundur Cantt., on "Obstetrical Problems in daily practice".

KALYANI BRANCH—A meeting of the branch was organised on 17-6-60 to discuss Family Planning. Dr. (Miss) R. Sen and Dr. A. Mitra spoke on the subject. Dr. S. C. Bhattacharya presided. Besides I.M.A. doctors, this meeting was attended by local doctors.

KANDI BRANCH—Under the joint auspices of West Bengal Government and the I.M.A., Kandi branch World Health Day was celebrated under the presidentship of Sri N. K. Saha, Sub-divisional Officer, Kandi, Dr. S. R. Das Gupta, Chief Medical Officer of Murshidabad attended as chief guest. An exhibition was organised. A public meeting and cinema show were also held. The meeting was addressed by Sri A. Sen Gupta, sub-divisional Publicity Officer, Dr. M. L. Dutta Roy, sub-divisional Health Officer, Major S. Ghosh, Secretary of the branch, and many other distinguished persons. Dr. B. P. Ghosh Hazra on behalf of the organisers thanked the gentlemen who attended the function.

KANPUR BRANCH—The annual report of the branch for 1958-59 shows an increase in membership of 5 per cent, the strength being 237 on 30-9-59. There were 51 meetings: 5 general body, 11 scientific, 12 executive committee, 8 social and 10 sub-committees.

The annual day was celebrated over two days on the 21st and 22nd February 1959 under the presidency respectively of Drs. S. S. Misra and C. B. Singh. Symposia were held and many papers were read.

The branch took matters with appropriate authorities regarding sales tax on dispensing, registration of medical practitioners with district authorities, E.S.I. scheme etc. The building fund of the branch was augmented by over Rs. 4,000 by staging a three-act drama.

K.G.F. BRANCH—A general body meeting of the branch was held on 29-5-60. Eighteen members were present. Dr. Y. P. Vasudevan of Coimbatore was the chief guest. The following cases were presented: (1) A case of Pericarditis complicating Lobar Pneumonia by Dr. C. Rajasekar (2) A case of multiple Hydatid Cysts by Dr. M. Punyamurthy.

MADHIPURA BRANCH—An ordinary meeting of the branch was held on 24-11-59. Ten members were present. Dr. S. K. Roy Choudhury, Civil Surgeon, Dr. T. N. Das, District Health Officer, Dr. G. M. Mitra were present on invitation. The members condoled the death of Dr. Sital Prasad Singh, Prof. of Medicine, Darbhanga Medical College.

An ordinary meeting was held on 16-4-60. Eight members were present. The secretary, Dr. H. N. Das read a report on the celebration of Behar Health Week by this branch. It was decided to observe the World Red Cross Day on 8-5-60.

An ordinary meeting was held on 17-5-60, Dr. G. Prasad presiding. Eleven members were present. Dr. G. Prasad, ex-secreteary of the Branch was congratulated on his election as vice-chairman of the newly formed Madhipura Town Notified Area Committee.

MADRAS CITY BRANCH—A meeting of the executive committee of the branch was held on 15-4-60. Eleven members were present. It was decided to call a special general body meeting for nominating the president and 3 vice-presidents of the Central Association. Eleven new members were admitted. Dr. B. Rama Rao was requested to look into the feasibility of undertaking social work by the members in Shalavaram area and Dr. Ranganathan in the Poonamalee area. The government was requested to collect the telephone bill from the general practitioners in monthly or quarterly instalments. The Dean of the General and the Stanley Hospitals was requested to permit hospital cases demonstrated in the I.M.A. meetings.

A special general body meeting was held on 29-4-60. Dr. G. Sriramalu presided. Nominations for presidentship and 3 vice-presidentship for the Central I.M.A. were made.

A clinical meeting was held on 29-4-60. Dr. C. Satyanarayana, professor ENT, Madras Medical College presided. Dr. Fritz Zollner of Frieburg University, West Germany could not attend due to illness. Dr. Roger Maspetiol of Paris College of Medicine spoke on Tympanoplasty. He also described indications, technique of operation, post-operative care of this operation.

A tea party was arranged on 10-5-60 to felicitate Dr. K. R. Doraiswamy Director, Premier Radiological Institute and Cancer Hospital, Mylapore, on his being conferred the Padma Shri. Dr. G. Sriramulu, President of the branch welcomed the guests and congratulated Dr. Doraiswamy. Dr. V. Venkappa, Dr. K. C. Nambiar, Dr. A. M. Sivaraman and Dr. A. Pattabi also spoke.

A meeting of the executive committee was held on 21-5-60, Dr. G. Sriramulu presiding. After routine matter, Dr. K. C. Nambiar spoke about the difficulties medical men would face in view of the select committee's recommendations on the Accommodation and Rent Control Bill. After discussion a sub-committee with power to co-opt was formed to go into the question.

MEERUT BRANCH—A general meeting of the branch was held on 13-3-60. Thirty one members were present. Dr. A. S. Maheswari presided. A sub-committee was formed for arranging a symposium. Dr. H. S. Trehen spoke on acute and chronic Sore Throat. After narrating the anatomy and physiology of the parts in detail, he discussed the pathological conditions and treatment. He also discussed, chronic tonsillitis, chronic pharyngitis, malignant diseases affecting the tonsils, Quinsy, also the causes and management of Epistaxis.

A general meeting was held on 7-4-60. Dr. J. R. Caroli presided. Sixteen members were present. In observance of the World Health Day, Dr. J. L. Caroli spoke about the history of Malaria Control since the construction of Panama Canal; Dr. B. B. Sharma, anti-malaria officer discussed the present scheme of malaria eradication; Dr. R. S. Batra discussed the feasibility of the scheme and enumerated the types of mosquitoes not affected by D.D.T.; Dr. K. L. Chopra discussed, "Is eradication of Malaria possible"; Dr. D. Bhutt district medical officer stressed on the co-operation of the people in this project.

General meeting was held on 15-4-60. Dr. A. S. Maheshwari presided. Twentysix members were present. Dr. M. Mani, Radiologist, Kodak Ltd. spoke on Special Observations on Radiology. Members doing radiology work took great interest in Dr. Mani's speech.

SHOLAPUR BRANCH—The General Body meeting of the Sholapur Branch was held on 2-3-60 and the following resolution was passed.

"The Indian Medical Association of the Sholapur Branch offers hearty congratulations to Dr. V. R. Khanolkar, Director of the Pathological Laboratory of the Tata Memorial Hospital, Bombay, on his appointment as Vice-Chancellor of the Bombay University and also thanks the Government of Bombay on the singular honour conferred on one of the distinguished members of the medical profession for the first time."

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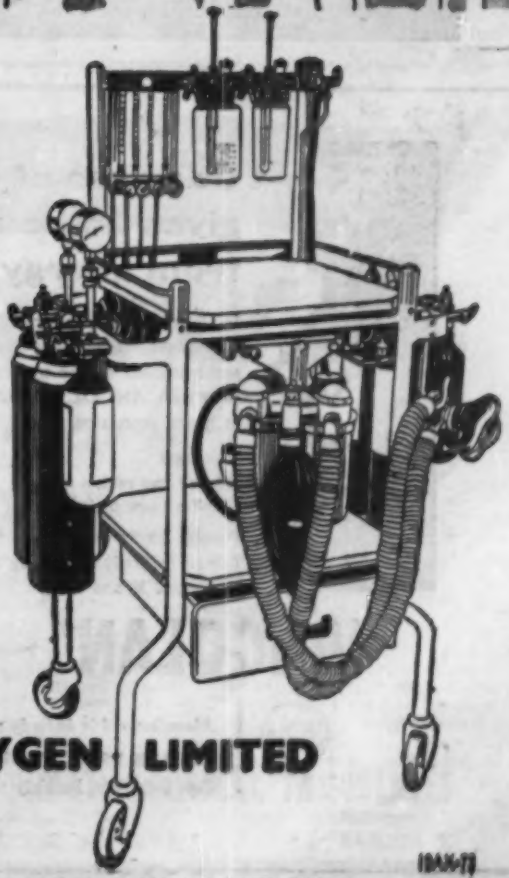

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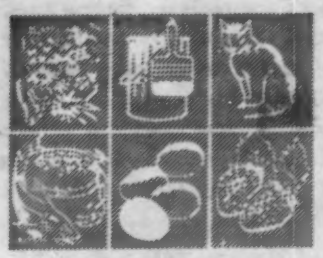

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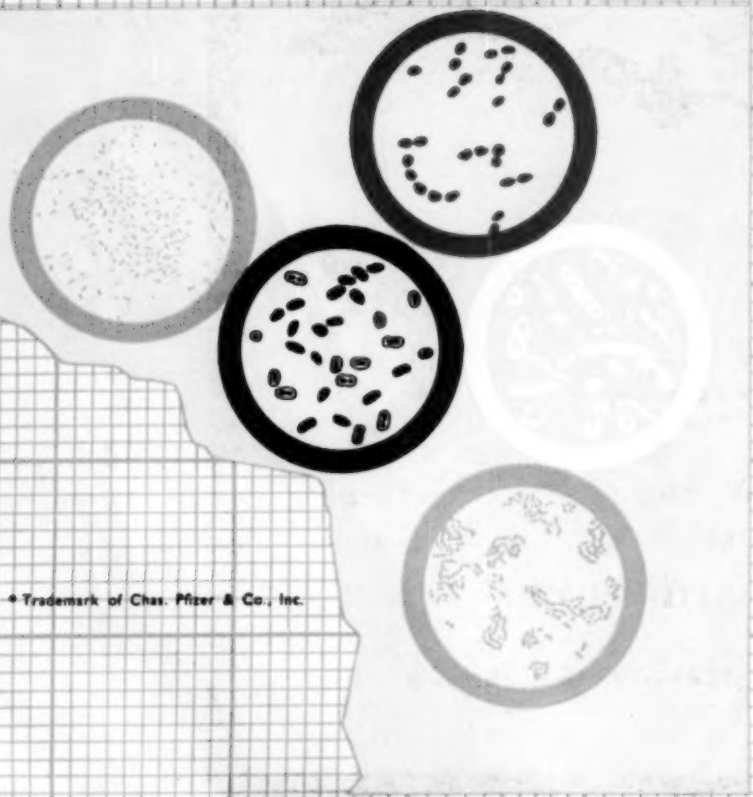

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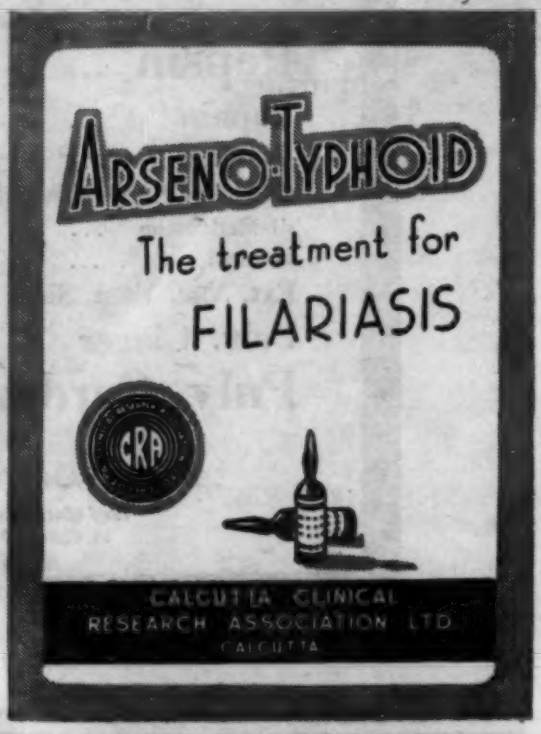

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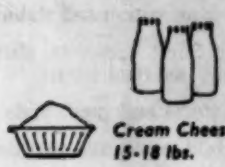

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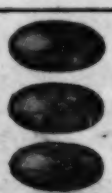

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